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TECHNICAL REPORT

ASWEPS REPORT NO. 3

TONGUE OF THE OCEAN RESEARCH EXPERIMENT

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U. S. NAVY HYDROGRAPHIC OFFICE
WASHINGTON, D. C.

ABSTRACT

A research experiment, conducted aboard the USS SAN PABLO for the purpose of studying temperature structure in the waters of the Tongue of the Ocean from 4 to 20 March 1960, is described. The data have been tabulated and listed as Appendixes to the report. Analysis of the data has not been completed; however, a preliminary examination shows that internal waves play a large part in the fluctuation of thermal structure in this area.

FOREWORD

In 1958, the Hydrographic Office was assigned the responsibility for the development of an Antisubmarine Warfare Environmental Prediction System (ASWEPS). This system is a five-year program designed to provide the Fleet with continuing environmental information and predictions in support of antisubmarine warfare operations.

Of paramount importance in the prosecution of this program is the availability of an oceanographic research vessel instrumented especially for ASWEPS requirements. This report deals with a research experiment conducted aboard the USS SAN PABLO (AGS-30) in the Tongue of the Ocean from 4 March to 20 March 1960. It is narrative in nature, containing a tabulation of the data, as well as generalizations resulting from a cursory examination of the data.

It is believed that analysis of the data obtained from this experiment will contribute significantly toward the development of a prediction technique for the thermal structure of the ocean.

E. C. STEPHAN
Rear Admiral, U. S. Navy
Hydrographer

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SCIENTIFIC PERSONNEL

The following civilian scientists participated in the ASWEPS field research program in the Tongue of the Ocean:

Wayne Magnitzky----------Chief Scientist
Robert Farland----------Electronic Engineer
Howard French----------Oceanographer
William Gladfelter----------Oceanographer
Edward Johnson----------Oceanographer
Griffith Knoop----------Oceanographer
Edward Lessmann----------Physical Science Technician
Gordon MacDowell----------Oceanographer
Paul Mazeika----------Oceanographer
Robert Pickett----------Oceanographer
Kemper Reece----------Electronic Development Technician
Douglas Smith----------Oceanographer
Frank Taylor----------Electronic Development Technician

I. INTRODUCTION

A research experiment was designed and implemented to study the interaction of the ocean and atmosphere and to relate these effects to the problems involved in the ASWEPS program. An oceanographic research team, consisting of nine Oceanographers, one Physical Science Technician, one Electronic Engineer, and two Electronic Development Technicians, was assigned to the USS SAN PABLO (AGS-30) to conduct the field work. The Tongue of the Ocean (TOTO) was selected as the most appropriate site for the experiment because it is a unique feature in the ocean with its rather steep slope and extremely flat and deep bottom and because of the availability of a 3-point mooring system installed at 24°35'N, 77°34'W. In addition, environmental results obtained aboard the USNS GIBBS during a preliminary survey of the TOTO in December 1959 and the work of the Woods Hole Oceanographic Institute and the University of Miami indicated that the TOTO would serve as an excellent field laboratory for the study of internal waves. Eighteen oceanographic stations were occupied, including a 5-day anchor station at the 3-point mooring system southeast of High Cay and a 2-day anchor station just east of Big Wood Cay. Figure 1 shows the approximate locations of the stations occupied in the TOTO.

II. RESEARCH EXPERIMENT

The experiment was conducted to determine the distribution in time and space of the horizontal and vertical temperature field; the energy exchange between the sea and the atmosphere was studied, particularly with respect to changes in the vertical temperature structure; data were obtained for use to evaluate the advective term in the distribution equation; studies of the density structure were accomplished by means of temperature and salinity measurements; and associated meteorological data were obtained to supplement the above. Since density is a governing factor in the behavior of internal waves, oceanographic casts were made to measure this variable. From the system of anchored buoys (thermal array) recording concurrently, it is believed that wave length and speed of propagation of the internal waves can be derived. Appendix I outlines a plan and proposed method of analysis for the study of internal waves. Time series data produced by the thermal array will be subjected to power spectrum analysis and the results will be used as a basis for the development of a prediction technique for thermal structure.

A. THERMAL ARRAY

Temperature measuring devices were assembled in an array. This was accomplished by using the anchoring cables of the permanent mooring bridle system, to which were attached 19 wire resistance thermometers at selected depths; an 11-point thermistor chain streamed from the USS SAN PABLO, and by lowering BT's. A schematic diagram of this installation is shown in Figure 2. Results of previous surveys in the TOTO indicated the depth of the thermocline at approximately 400 feet. Accordingly, the electrical cable and sensing elements were fabricated for this depth.

Because the layer depth extended to 650-700 feet during this period, all probe depths were modified aboard ship to cope with this unexpected phenomenon.

The array was designed in the form of three triangles with the apex of each at buoy A. The large triangle was formed by buoys A, B, and C, the length of the sides being 1500 feet. The medium triangle was formed by buoy A and two dan buoys D and E hung from polypropylene rope, 150 feet from the apex A. The small triangle was formed by buoy A and two dan buoys F and G hung from polypropylene rope, 50 feet from the apex A. Spongex floats were used to give the electrical cable the necessary buoyancy. The data from the resistance thermometers were printed out on chart paper by two Brown recorders, twenty seconds being required to scan all nineteen probes. Figure 3 shows part of the array streamed from the USS SAN PABLO to one of the mooring buoys and Figure 4 shows a close-up of one of the mooring buoys.

Another component of the thermal array consisted of a thermistor chain streamed from the USS SAN PABLO. This equipment was fabricated at the Hydrographic Office,using 14-conductor Vector cable and eleven thermistor probes plus a pressure element. The chain was constructed so that the pressure element and the last thermistor probe could be lowered to at least 1200 feet. Each probe consisted of a previously calibrated bridge circuit and provided a precise voltage to a DYMAC voltage - to - frequency connector, which in turn was counted and then digitally presented on paper tape at the rate of twelve data points every 65 seconds. Five of the thermistor probes malfunctioned so that data were collected at depths of 580, 650, 670, 690, 730, 750 and 770 feet, respectively.

Mechanical 900-foot BT's and paired reversing thermometers on the Nansen bottles were used to supplement the temperature data from the thermal array.

B. OTHER PARAMETERS

In order to arrive at a satisfactory technique to obtain solar irradiation measurements at sea, the SAN PABLO was instrumented with pyrheliometers, incident sensing from the stem and deckhouse, and reflected sensing from the stem and port/starboard booms. Flat-plate radiometers were also utilized at the stem location to record long-wave incoming/reflected values. For this investigation, Daystrom-Weston Corporation recording instruments, with specially furnished ranges, were installed. The instruments were found to perform well within field requirements and with the flexibility of ranges available, many erratic patterns previously doubtful are now believed to be fully documented. Figure 5 shows the radiation instrument action used.

The Roberts Current Meter was used to obtain profiles of water movement. The meters presented no problems and a good set of current

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The Roberts Current Meter was used to obtain profiles of water movement. The meters presented no problems and a good set of current

data was obtained while on anchor station.

Wave data were obtained using the "Splashnik", developed by the David Taylor Model Basin, as the basic sensing element. The system consists of a buoy assembly containing a transducer and transmitter, a wide band FM receiver, an electronic low pass filter, and a recorder. The transmitter emits a signal that varies in frequency proportional to the acceleration imparted to the buoy assembly by wave action. This signal is received by the antenna mounted on the ship and is fed into a receiver. In the receiver, the frequency changes are converted to a varying dc voltage which is proportional to the acceleration. The dc voltage is placed on the input of an adjustable low pass filter which cuts off the signals produced by the surface chop of the sea, but passes unaltered the lower frequency signals produced by the larger and longer waves. The output of the filter unit is then recorded on magnetic tape. Figure 6 shows the float assembly, or "Splashnik", of the wave height telemetering buoy system.

Oceanographic casts, using the Nansen bottle and paired reversing thermometers, were made for obtaining water samples in order to compute density.

Meteorological data were obtained using standard equipment, as well as time-lapse photographs of cloud cover. Wind measurements were made at three levels.

III. INSTRUMENTATION TEST AND EVALUATION

A. ELECTRIC CABLE REELS

Installed aboard the survey vessel were two models of newly-manufactured electric cable reels of 12,000 and 2,000 foot capacity, respectively. Figure 7 shows the smaller cable reel and winch. These units, designed to operate with electrically conductive cable (six conductors), offer infinite speed control in both powered lowering and hoisting positions and have the advantageous feature of rapid interchangeability of the reels. Approximately 30 lowerings were made with the smaller unit, utilizing two models of electronic bathythermographs. Operation was found to be smooth and trouble free. In addition, since there was no universal connector for both BT's, drums were changed daily. This operation was performed in about 10 minutes with insignificant delays in data acquisition.

B. ELECTRONIC BATHYTHERMOGRAPHS

Two models of an electronic bathythermograph, the WHOI Subaqueous Temperature Probe and the HYDRO Linear Thermistor System were tested during this period with excellent results. Briefly, both consist of a dc pick-off and self balancing resistance bridge circuit with a thermistor sensor as the variable leg. This was the first deepwater test of these instruments, both of which have a 600 psi (1350 foot) depth limitation.

Figures 8 and 9 show a comparison of the traces obtained by the electronic BT's with the corresponding standard Nansen cast and 900 foot mechanical BT. A statistical analysis of the electronic BT data collected on this cruise will be made as compared to other methods of temperature-depth measurements. Data collected from future tests will likewise be analyzed, and from these results a final design will be selected. Figure 10 shows the WHOI electronic BT and Figure 11 shows the HYDRO linear electronic BT.

IV. OCEANOGRAPHIC AND METEOROLOGICAL OBSERVATIONS

This section is a resume of the kind and quantity of data obtained. These data are tabulated in the Appendixes as indicated below.

A. TEMPERATURE DATA

The following methods were used to obtain temperature with depth data. In general, when two or more instruments were used simultaneously, the data agreed well.

1. Mechanical 900' BT's - 801 BT's were obtained to an average depth of 840 feet. The data, 24360 data points, are presented in Appendix II.

2. Hydro electronic linear BT - 14 traces down and 14 traces up were plotted by the X-Y recorder.

3. WHOI electronic BT - 19 traces down and 19 traces up were plotted by the X-Y recorder.

4. Thermistor Chain - Approximately 24 hours, or 15,440 data points, of continuous data were recorded. The data have not been completely reduced at this time.

5. Reversing thermometer - 645 data points were obtained and are presented in Appendix III.

6. Thermal array - Approximately 26 hours of continuous data were recorded on two 12-point Brown recorders. However, only 17 hours of the data are considered useful and the data taken at the 700' depth are presented in Appendix IV. Data from all sensors total 61,200 data points.

B. SEA AND SWELL

Visual observations were made every 15 minutes. Approximately 1/2 hour of Splashnik data was recorded on magnetic tape.

C. CURRENTS

Eighty-seven current profiles at seven depths were obtained, representing 616 data points. The data are presented in Appendix V.

D. OCEANOGRAPHIC CASTS

Forty-three Nansen casts were made, including five deep casts and representing 645 data points each of temperature, salinity, and computed sigma - t and sound velocity. The data are presented in Appendix III.

E. METEOROLOGICAL DATA

These data were obtained with standard meteorological instrumentation.

1. Air temperatures - 216 hours of wet and dry bulb data were obtained.

2. Winds - Wind speed and direction were measured at the mast and bow. The bow-height sensor measured wind speed on a continuous basis.

3. Radiation - Continuous recordings were made using five pyrheliometers and one flat-plate radiometer. 28,800 data points were obtained with the pyrheliometers and are presented in Appendix VI.

V. SHIPBOARD DATA REDUCTION

Data reduction and processing were successfully completed aboard a Navy oceanographic vessel for the first time. Six hour watches were maintained continuously in the data center established aboard the USS SAN PABLO. Meteorological data, mechanical BT's, ocean casts, and thermistor chain data were encoded and key punched onto IBM cards. The data were checked and verified aboard ship and publication listings obtained upon return to HYDRO.

VI. PRELIMINARY EXAMINATION OF OCEANOGRAPHIC DATA

The Tongue of the Ocean is widely recognized for its unique features, particularly with respect to size, shape,and depth. To what extent the geometry of the Basin completely influences the physical properties is not known. However, the distribution of these physical properties is apparently influenced by changing climatic conditions, prevailing meteorological situations, and the oceanographic circulation patterns east of the Bahamas. Local changes, particularly internal water movements, appeared to be related directly to the configuration of the ocean basin.

A. CURRENTS

To determine the circulation pattern in the Tongue of the Ocean, density currents were computed relative to the 300-meter level. Comparison of these currents with actual hourly observations taken during the period 9 to 13 March at the moor show excellent agreement. Analyses of dynamic current data indicate a circulation pattern in which water

courses southward through the eastern portion, gradually curves westerly, and then sets northward through the western portion. Further analyses of these data suggest the possibility of two major eddies, one located between the northern and central transect and the other located between the central and southern transect.

Previous investigations have shown the currents in this area to be weak and subject to influence by prevailing winds. A review of the currents while in the mooring bridle substantiates this latter fact, but also shows current speeds as great as 1 knot. The most striking example of wind-driven currents can be seen when comparing data for 11 and 12 March. During this period, water movement in the upper layer changed almost 180° under the influence of strong northerly winds; maximum speeds were obtained coincident with maximum winds. The following statements are relevant to the 87 observations made during the period 9 to 13 March:

1. Current gradient 10 to 100 meters:
   Average, 0.2 knot; range, 0.0 to 0.8 knot

2. Current speed at 10 meters:
   Average, 0.5 knot; range, 0.0 to 1.0 knot

3. Prevailing current direction 10 to 100 meters : northeasterly

4. Current direction variation 10 to 100 meters :
   Average, 40°; range, 0° to 160° (Difference decreases the longer a wind persists from one direction)

5. The strongest current (1.0 knot) was observed setting southeast during a northeasterly wind whose speed increased from 16 to 24 knots in 4 hours.

6. Below 100 meters, the current speed averaged about 0.3 knot with a range from <0.2 to 0.5 knot the first day on station. The direction varied from northerly to east-northeasterly. The remainder of the time the current speed averaged about 0.5 knot with a range from <0.2 to 0.7 knot. The direction varied from north-northeasterly to southeasterly.

B. TEMPERATURE

1. Surface

The oceanographic observations collected during the Tongue of the Ocean survey clearly demonstrate the homogeneity of the water masses. Sea surface temperatures varied from a minimum of 23.76° to a maximum of 24.10°C, or a difference of 0.34°C (0.61°F). From Tinker Rocks to Green Cay, temperatures showed an increase from 23.76°C to 23.99°C, the latter temperature being measured in the vicinity of Green Cay. Similarly,

the distribution of sea surface temperature over the northern portion, from near Mastic Point to Goulding Cay, showed a corresponding increase in temperature, with values ranging from 23.84°C in the western sector to 23.94°C in the eastern sector. On the other hand, the variation of temperature along the central transect, extending from station 10 to station 12 showed a decrease in sea surface temperature with values ranging from 24.00°C in the western sector to 23.87°C in the eastern sector. The general trend of sea surface temperature along a longitudinal axis extending from station 1 to station 17 showed that highest temperatures were observed in the northern one-third of the survey area.

2. Vertical Cross Sections

a. The oceanographic stations which were taken on a line extending from Tinker Rocks to Green Cay, stations 3 through 6, show the same general properties at each location (Fig. 12). The vertical distribution of water temperature showed an increase between the surface and intermediate depths with values ranging from 0.16° to 0.24°C between stations 3 and 4. Although less marked, a similar positive temperature gradient existed between stations 5 and 6 with temperature increases ranging from 0.20° to 0.04°C. The depth of maximum temperature was deepest at station 4, 135 meters, and shallowest at station 3, 70 meters. The main thermocline began at a depth of approximately 140 meters at station 3 and sloped downward toward the east to a depth of approximately 150 meters.

b. The transect in the central portion of the survey area, namely stations 10 through 12 (Fig. 13), also shows temperature increases at depth; however, the magnitude of these temperature increases is not as great as in the southern transect. Specifically, at station 10 the surface layer is characterized by a decrease in temperature of approximately .5°C to a depth of 20 meters and then a very slight increase of .2°C to 35 meters. A gradual decrease in temperature was observed from this depth to the main thermocline, which began at approximately 180 meters. On the other hand, the intrusion of warm water can be noted at stations 11 and 12 at depths of approximately 80 and 140 meters at station 1 and at depths of 10 and 100 meters at station 12. The main thermocline along this transect appeared roughly horizontal at the 185-meter level between stations 10 and 11 and then depths generally decreased, the thermocline sloping gradually upward to depths of 150 meters.

c. The transect for the northern portion, stations 15 to 18, Figure 14, demonstrated characteristics similar to those observed in the central and southern portions. At all stations, positive temperature gradients were noted at depth, the strongest of these being found at stations 16 and 17 where temperature increases on the order of .12°C were found. One striking feature not in evidence at the southern transect was a core of colder water at approximately 100 meters between stations 16 and 17. Apparently, this tongue of colder water was trapped by intrusion of warmer water at the 150 meter level. The main thermocline

generally sloped downward from west to east from approximately 135 meters at station 15 to 170 meters at station 18.

3. Longitudinal Cross Section - The longitudinal cross section, extending from south to north (Fig. 15), shows the same general features described in the latitudinal cross sections. The main thermocline slopes downward from south to north, from a mean depth of 150 meters at station 4 to a maximum depth of 190 meters at station 13. The factors producing such a change can be attributed to either piling up of water under wind pressure or tidal influence. The direct cause cannot be determined precisely inasmuch as the survey was conducted in approximately 4 days.

4. Anchor Station Data - Surface temperature of the TOTO water at $24^{o}35'N$, $77^{o}34'W$ ranged from 23.61^{o} to $23.99^{o}C$, or a range of $0.28^{o}C$, during the six days SAN PABLO was tied in the mooring bridle system. During this same period of time, layer depth fluctuated from 525 feet to 695 feet, or a range of 170 feet. Daily fluctuations of layer depth were as follows:

Day March	Layer Depth Feet	Range of Layer Depth Feet
7	580-650	70
8	595-640	45
9	605-685	80
10	650-695	45
11	605-685	80
12	610-655	45
13	530-655	125
14	525-575	50

C. SALINITY

1. Surface - The horizontal distribution of surface salinity shows a gradual increase from the entrance of the Tongue of the Ocean southward. At the southernmost transect, salinity values ranged from $36.60^{o}/00$ on the western side to $36.75^{o}/00$ on the eastern side. At the northernmost transect, values were nearly the same, displaying properties typical of open ocean conditions. The transect extending across the central portion, on the other hand, showed higher salinity values on the western side than on the eastern side. Under normal conditions, higher salinity values would be expected on the eastern side, principally due to shoalness of the water area and its ability to produce high saline water. Salinity values along the central transect varied from $36.70^{o}/00$ to $36.52^{o}/00$.

2. Vertical Cross Sections

a. Stations 3 through 6 - Approximately 4 hours were required to occupy stations 3 through 6; therefore, the data obtained on this

cross section are nearly synoptic in nature. Analysis of all salinity profiles for this period show an intrusion of higher saline water at depths ranging from 140 meters at station 3 to 70 meters at station 6 (Fig. 16). Probably, this intrusion of high saline water originates from the shoal water area surrounding the Tongue. The magnitude of the salinity increase ranges from .39^0/00 at station 3 to .08^0/00 at station 6. A marked halocline exists below the depth of maximum salinity, with gradual decreasing salinity values to depths of 600 meters. For the most part, the halocline slopes generally upward from west to east.

b. Stations 10, 11 and 12 - As in the southern transect, these stations were occupied during a three to four hour period; and hence, are nearly synoptic. Similar properties can be found in this transect as were found in the southern transect. First, the increase in salinity with depth can be found at each station. This salinity increase varies from .26^0/00 at the western station to .40^0/00 at station 11 to .35^0/00 at the easternmost station (Fig. 17). The depth of maximum salinity ranges from 160 meters at station 10 to 180 meters at station 11 to 150 meters at station 12. The halocline that exists below these depths is quite marked, with salinity values decreasing gradually.

c. Stations 15 through 18 - Although the horizontal distribution of sea surface salinity shows little change between stations 14 and 18 (Fig. 18), the vertical distribution shows a radical change at each station. As in the previous transects, the intrusion of high saline water can be found at approximately the same depths. For example, at station 15, the increase in salinity from the surface to 190 meters is .28^0/00. Similar increases can be found at the other stations, with gradients ranging from .31^0/00 at station 16 to .37^0/00 at station 18. The depth of maximum salinity along this transect is nearly horizontal, ranging from 190 meters at station 15 to 185 meters at station 16, 170 at station 17 to 180 at station 18. The salinity decrease below this level is less marked than at the southern transects, and in all observations, salinity values are above 36.00^0/00.

3. Longitudinal Cross Section - Figure 19 has been prepared to show the longitudinal distribution of horizontal and vertical salinity variations in the Tongue of the Ocean. This figure clearly illustrates the general increase in surface salinity values, with highest readings being obtained in the southern portion and lowest values being obtained in the northern portion. It also clearly illustrates the intrusion of high saline water throughout the entire Tongue of the Ocean. Figure 19 illustrates that the depth of maximum salinity slopes downward from a least depth of 100 meters at station 1 to a maximum depth of 180 meters at station 11. Variation in salinity below these depths appears generally constant. On the other hand, the distribution of salinity above this level varied considerably from north to south. The Tongue of the Ocean appears to be divided into two cells, one being typical of the region between station 1 and station 7 and the other being typical of the area between stations 7 and 18. The isohalines between station 7

and 18 slope gradually downward, and the surface values of $36.77^{0}/00$ at station 7 can be found at a depth of 140 meters at station 18.

D. DENSITY

1. Surface - The horizontal distribution of surface density shows highest values in the southern portion of the Tongue. Density values (expressed as sigma - t) increase from 24.78 along the northern transect to 25.09 at the southernmost station. In general, the highest density values are found along the western portion of the basin and minimum density values are found along the eastern portion of the basin. An example of this horizontal change can be found by comparing the values along the midtransect. In this example, density values range from 24.95 at station 10 to 24.85 at station 12. A similar change can be noted at the northern transect, although the magnitude is less marked than over the central portion.

2. Vertical Cross Sections

a. The vertical distribution of density along the southern transect demonstrates that the waters in this region are nearly isopycnal (Fig. 20). At station 3, isopycnal conditions can be found to depths of about 40 meters, whereas, at station 4 they can be found to depths of 20 meters. This condition also exists at station 5. At station 6, unstable conditions, probably arising from the intrusion of high saline water off the shoal banks, creates a density inversion in which density values increase from 24.87 to 25.00. The pycnocline commences at approximately 150 meters at stations 3 through 5 and approximately 170 meters at station 6. For the most part, isopycnals along this transect are nearly horizontal, except between stations 5 and 6 where a horizontal gradient exists causing the isopycnals to slope gradually downward.

b. Stations 10 through 12 - No evidence of density inversions can be found along this transect (Fig. 21). Nearly isopycnal conditions prevail from the surface to depths of approximately 50 meters, with a gradual increase below this depth. The pycnocline begins at depths of approximately 160 meters and the isopycnals are nearly horizontal across the entire transect.

c. Along the northern transect, isopycnal conditions prevail from the surface to 90 meters at station 15, decreasing eastward to approximately 40 meters at station 18 (Fig. 22). As in the central transect, a gradual increase in density can be found between this level and the main pycnocline which can be found at approximately 150 meters at all stations.

3. Longitudinal Cross Section - The longitudinal variation in density is shown in Figure 23. The most striking feature of this figure is the orientation of the main pycnocline, which for the most part is nearly horizontal below depths of 150 meters. Above this level, the density

change is relatively slight, and the circulation structure described under paragraph A, above, is clearly evident.

VII. CONCLUSIONS

A preliminary examination of the data shows that internal waves play a large part in the fluctuation of thermal structure in this area. The data will be carefully analyzed to determine whether the modes of oscillation of the internal waves are simple. If they are, the prediction of thermal structure with reasonable accuracy can be simplified.

A research vessel, instrumented especially for ASWEPS requirements, would allow for the continuation of experiments of this nature.

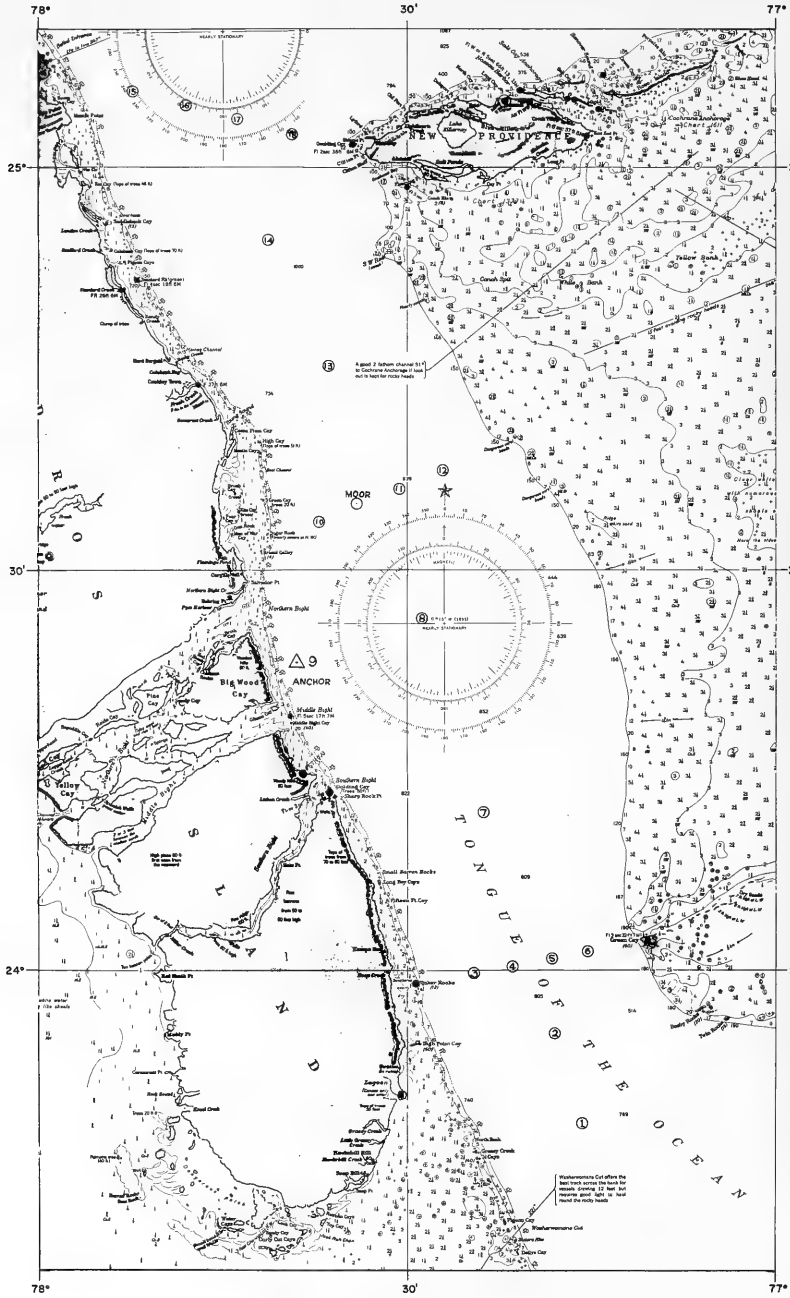

FIGURE I LOCATION OF STATIONS

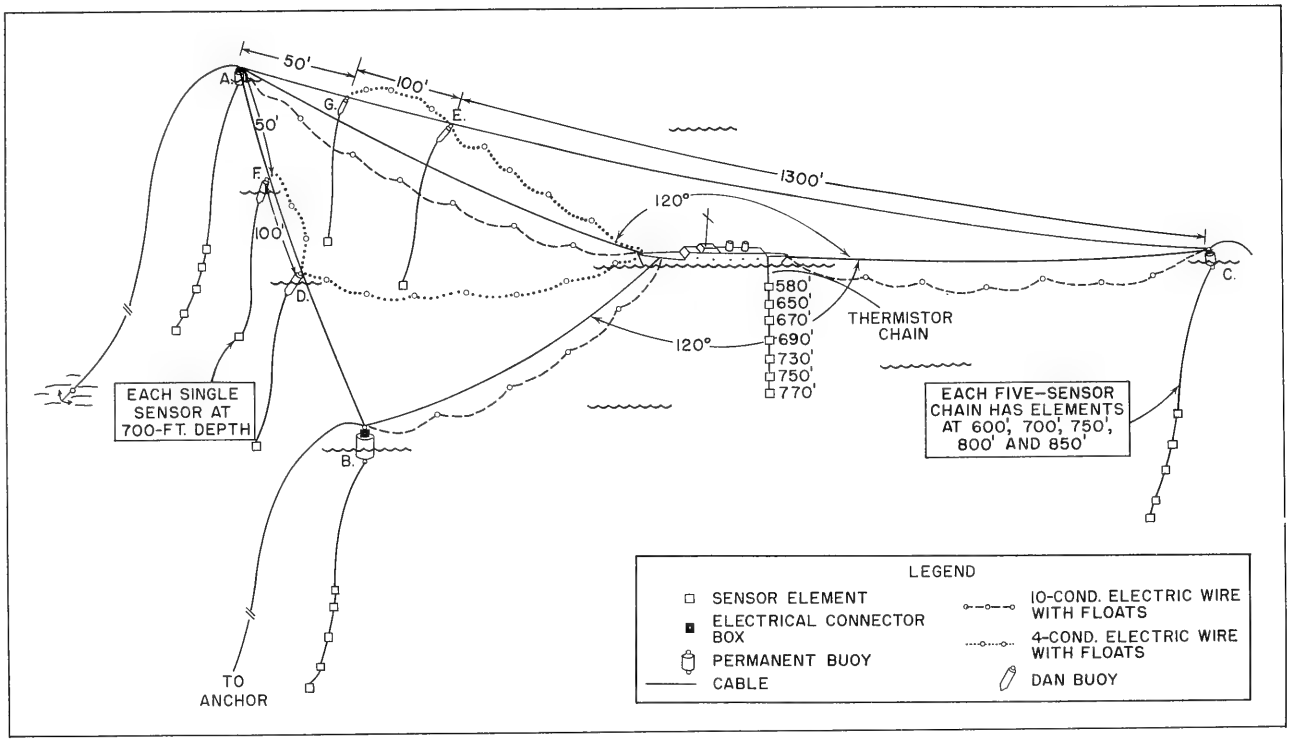

FIGURE 2. SCHEMATIC OF THERMAL ARRAY AND ANCHOR ASSEMBLY

FIGURE 3 PART OF THERMAL ARRAY FROM USS SAN PABLO TO APEX BUOY SHOWING SPONGEX FLOATS

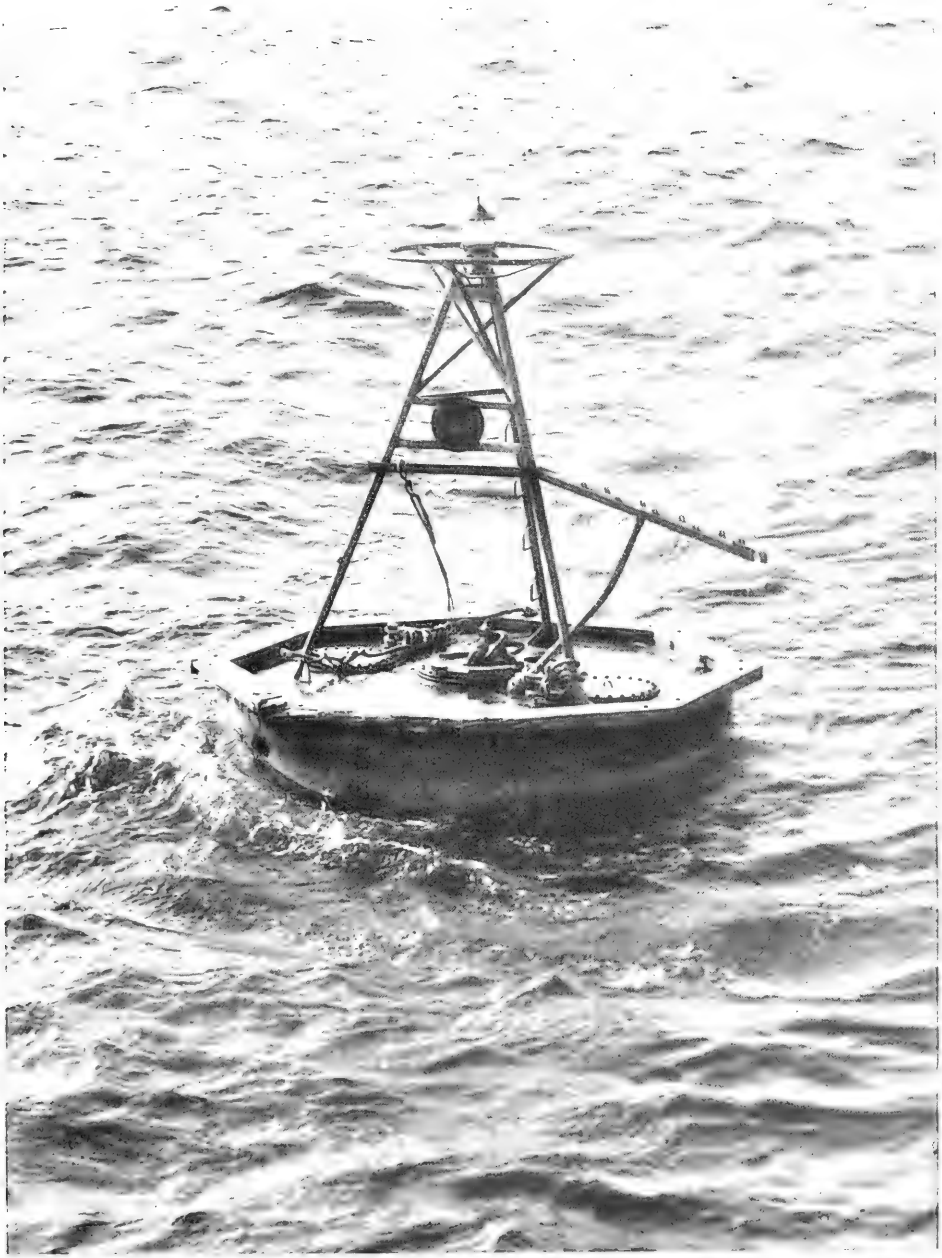

FIGURE 4 MOORING BUOY USED IN THERMAL ARRAY

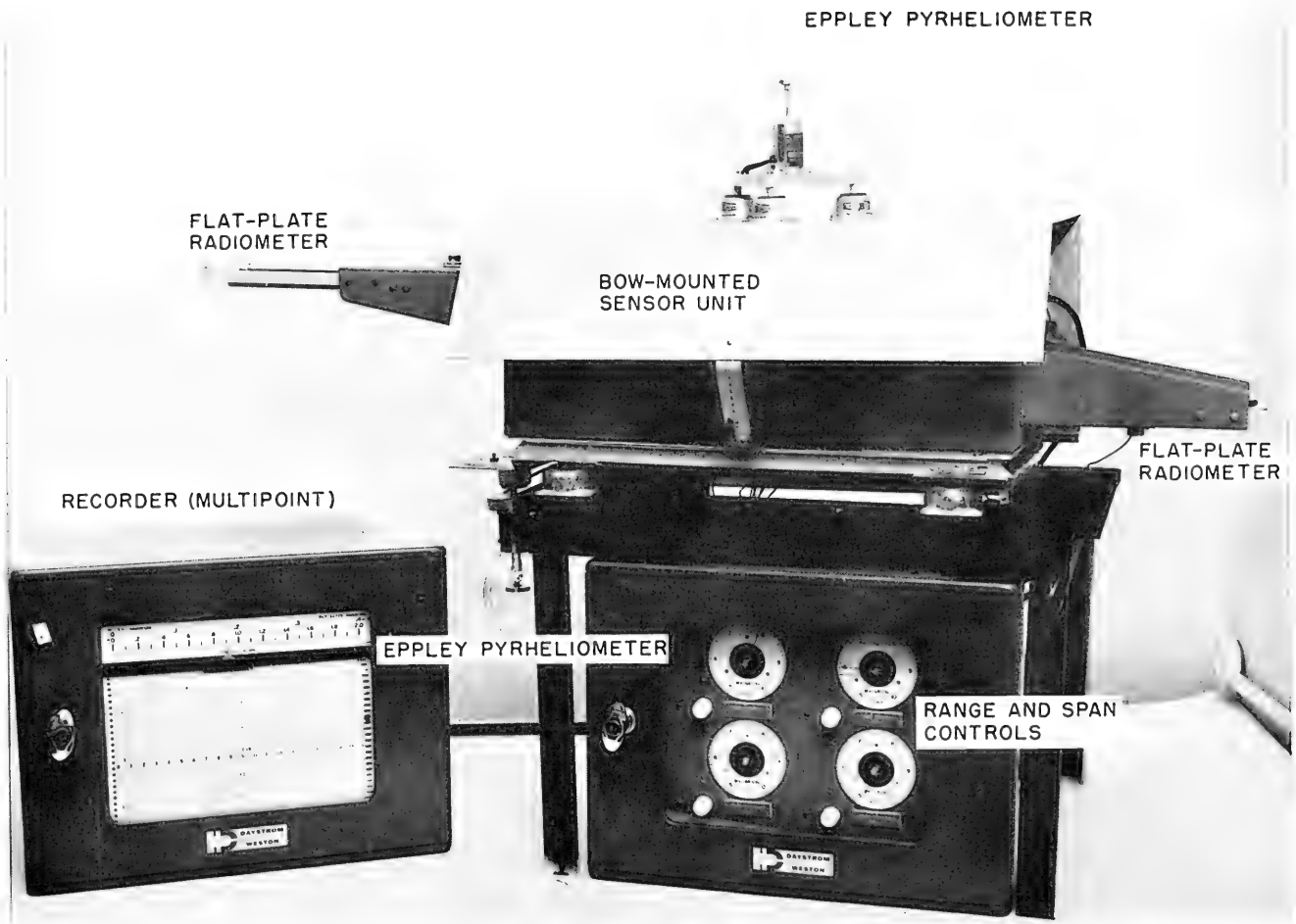

FIGURE 5 RADIATION INSTRUMENTATION

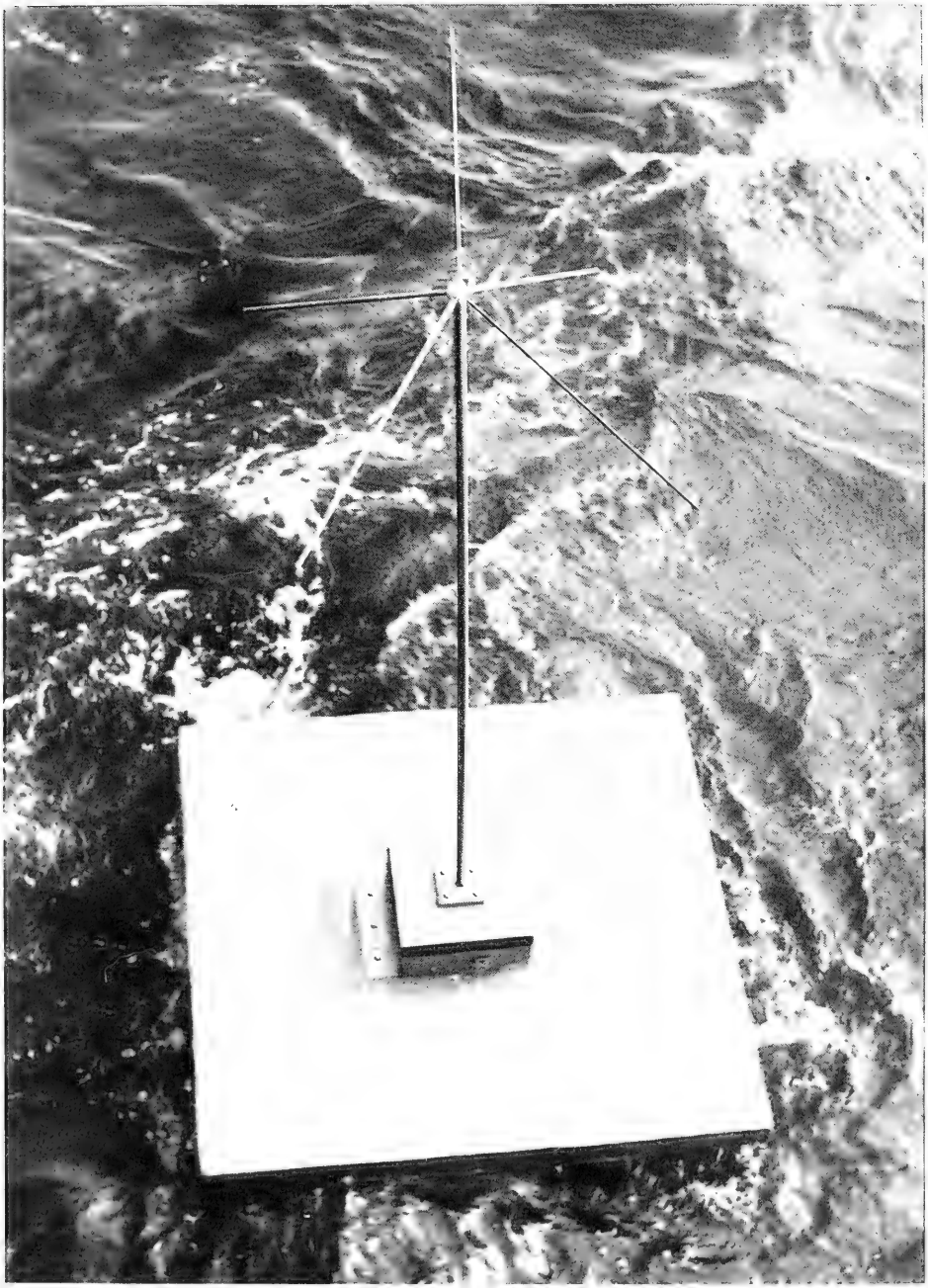

FIGURE 6 SPLASHNIK – OVER-THE-SIDE WAVE SENSOR

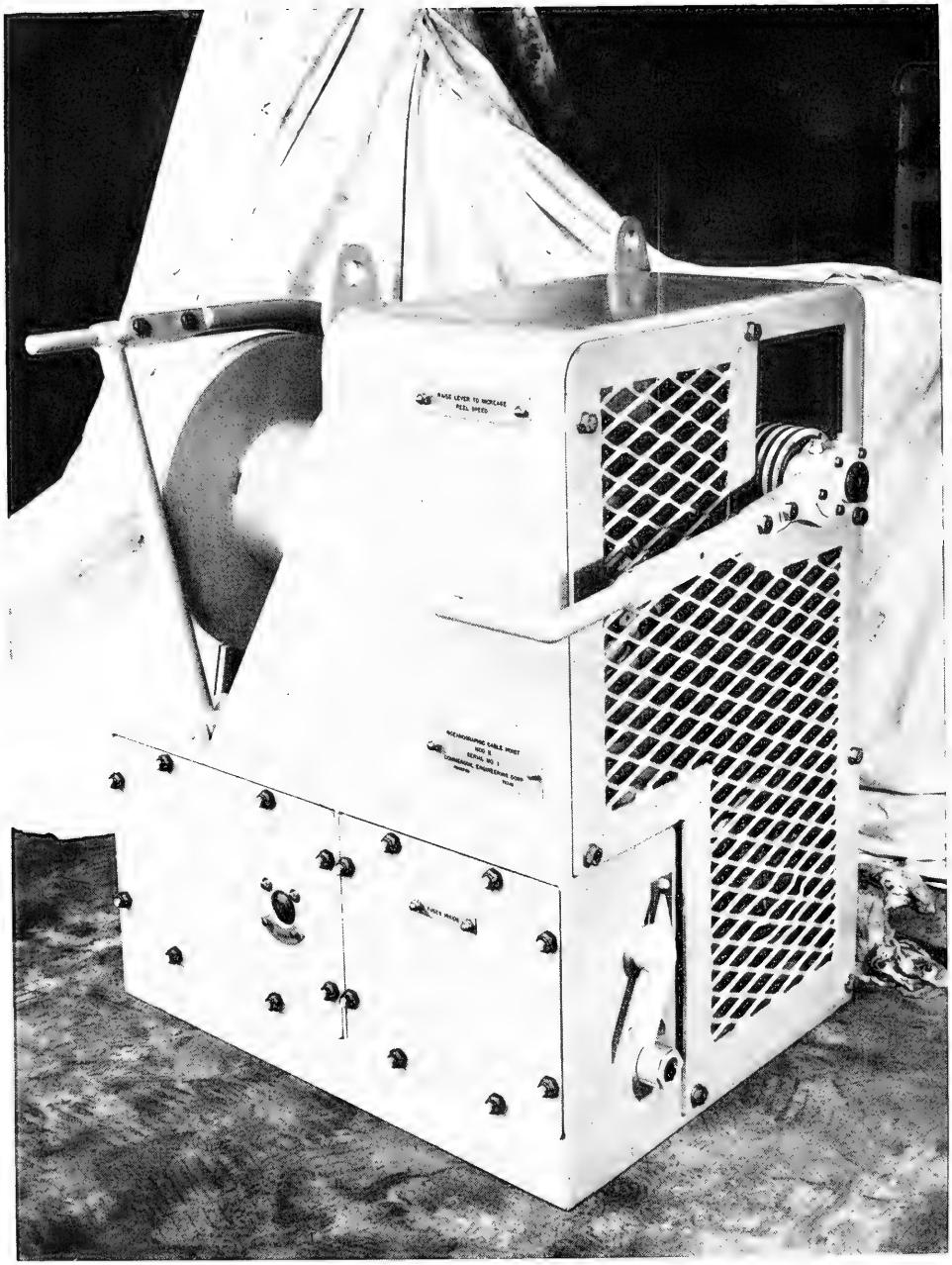

FIGURE 7 ELECTRONIC BT CABLE REEL

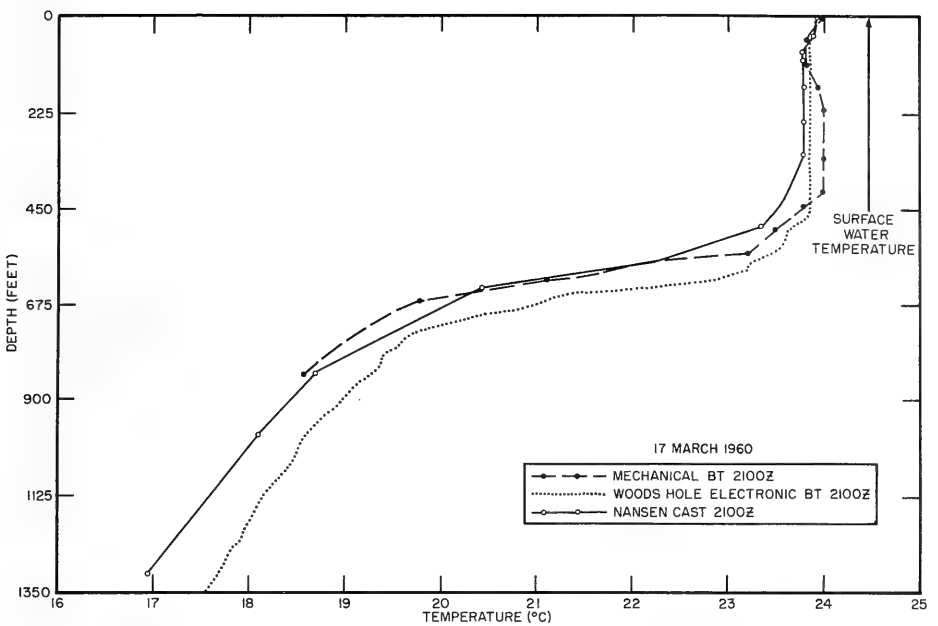

FIGURE 8- COMPARISON OF DATA FROM WOODS HOLE ELECTRONIC BT, MECHANICAL BT, AND NANSEN CAST.

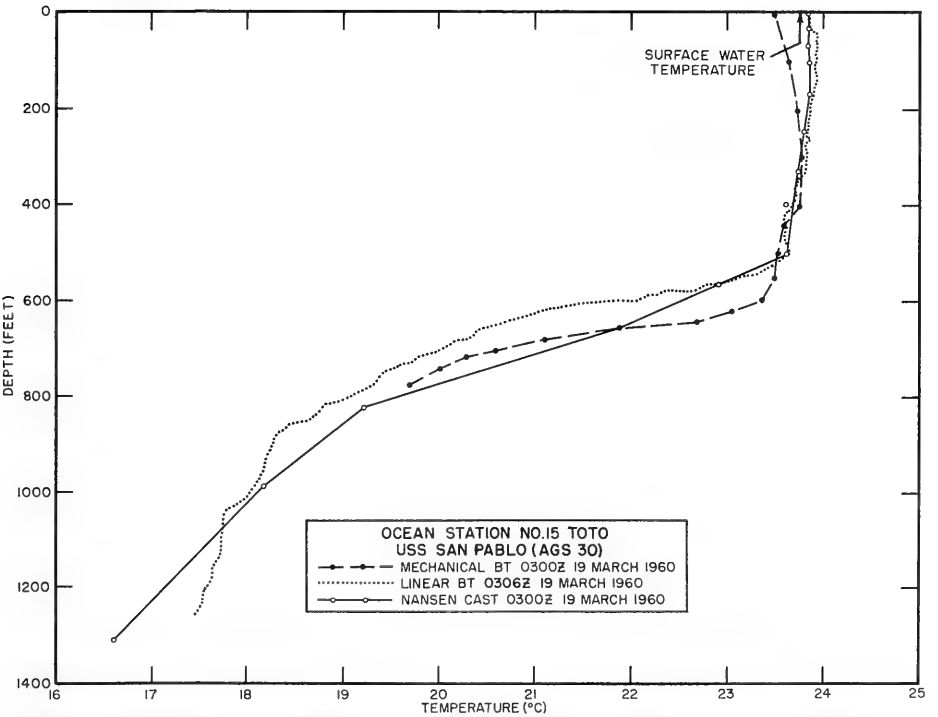

FIGURE 9- COMPARISON OF DATA FROM HYDRO LINEAR ELECTRONIC BT, MECHANICAL BT, AND NANSEN CAST.

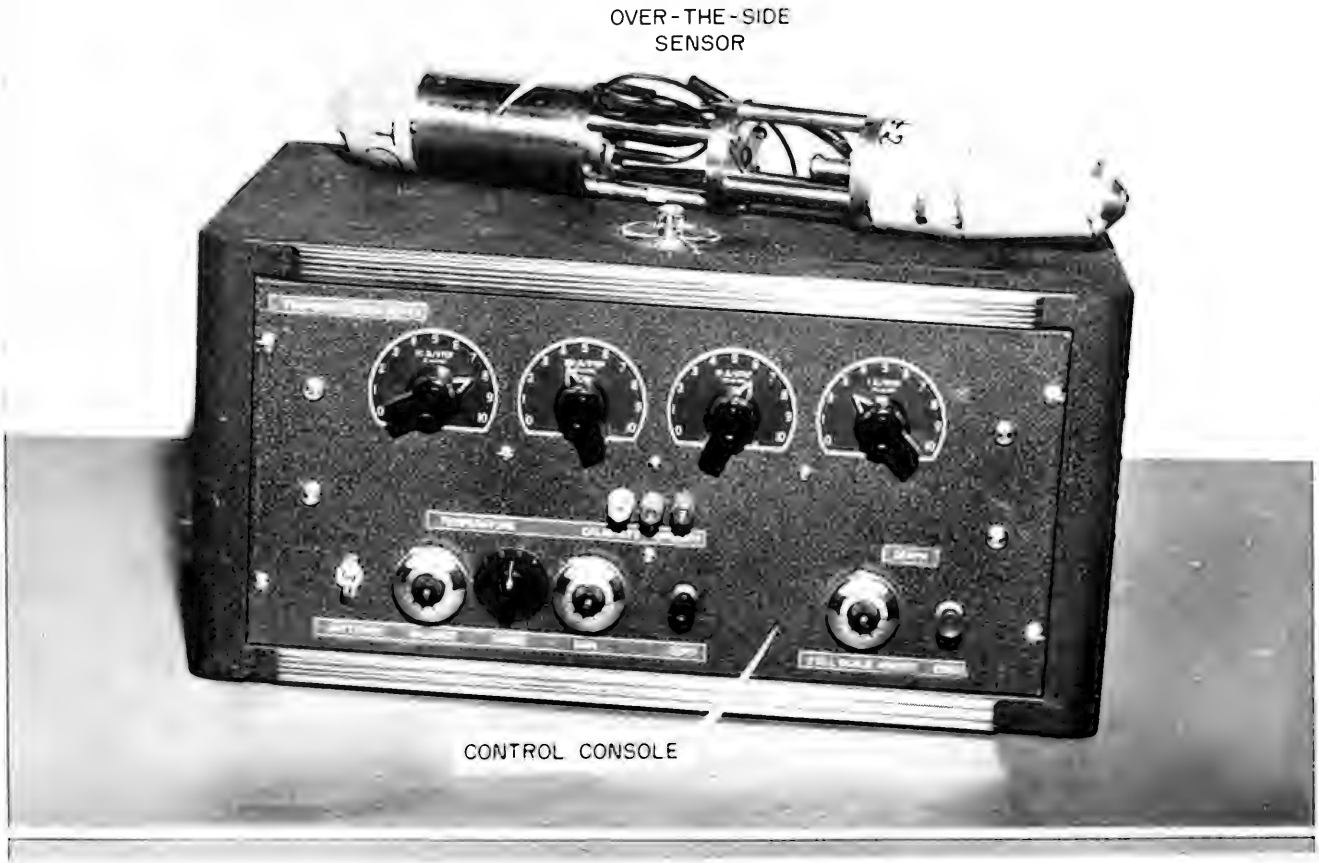

FIGURE 10 WHOI ELECTRONIC BT

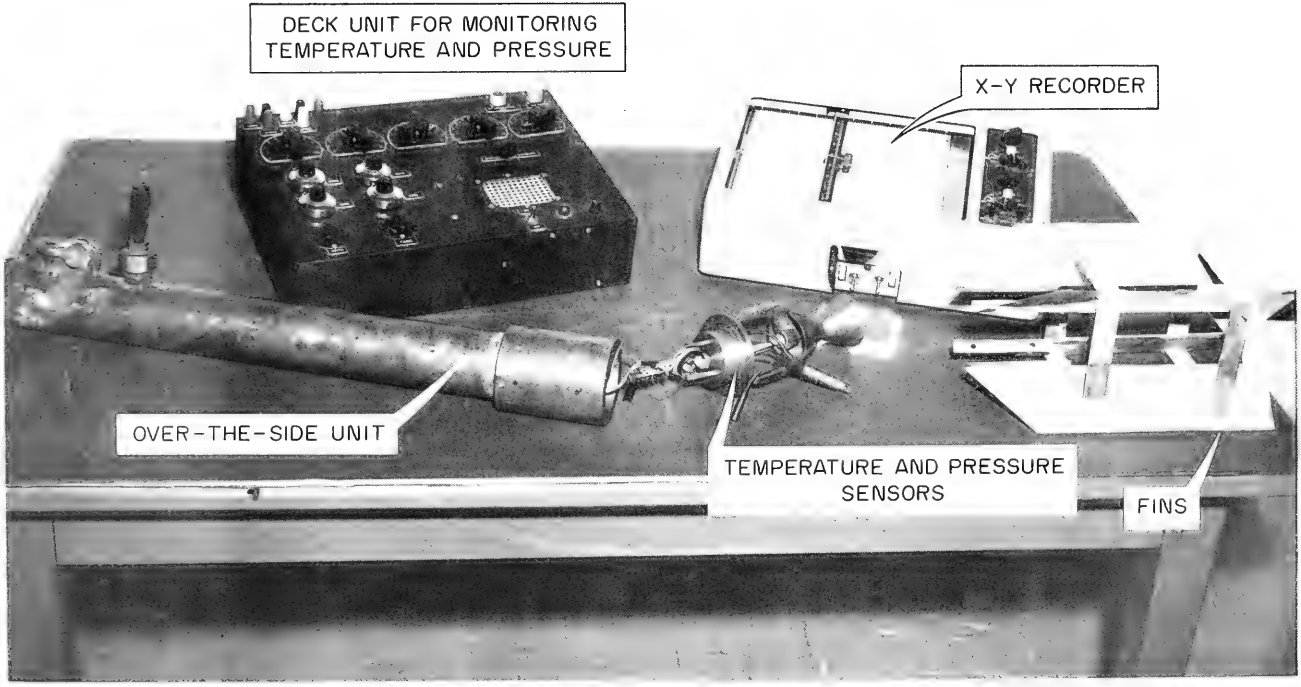

FIGURE II HYDRO LINEAR ELECTRONIC BT

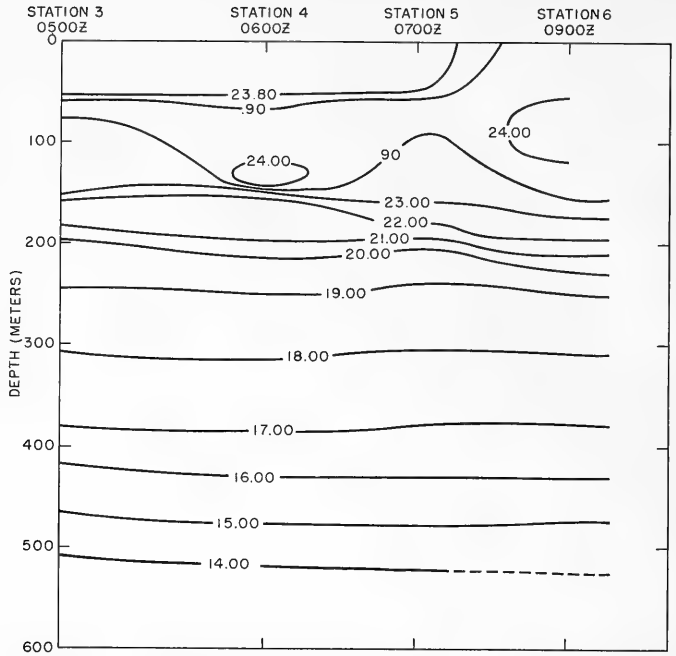

FIGURE 12 TEMPERATURE (°C) CROSS SECTION STATIONS 3-6
16 MARCH 1960

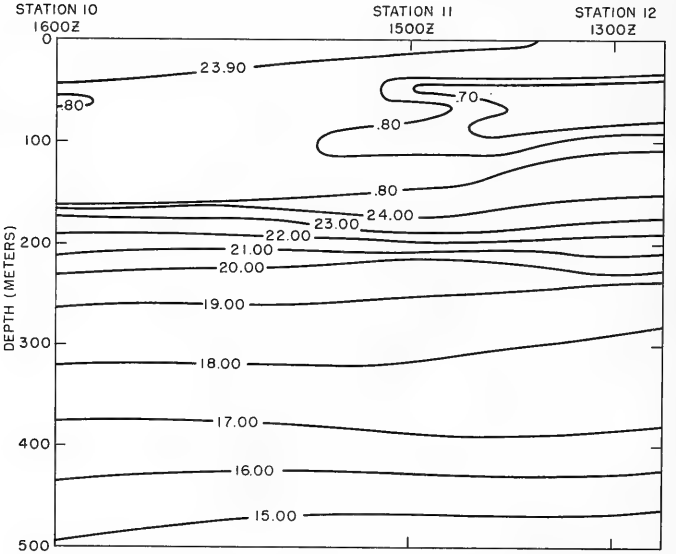

FIGURE 13 TEMPERATURE (°C) CROSS SECTION STATIONS 10-12
18 MARCH 1960

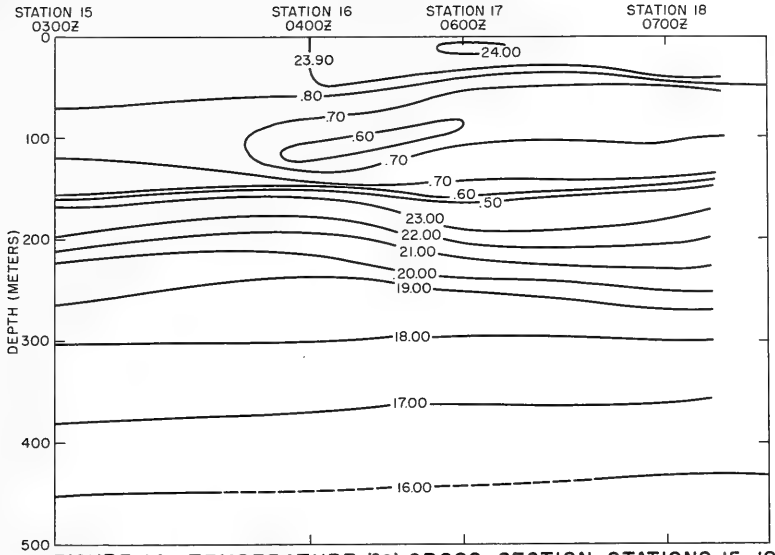

FIGURE 14 TEMPERATURE (°C) CROSS SECTION STATIONS 15-18
19 MARCH 1960

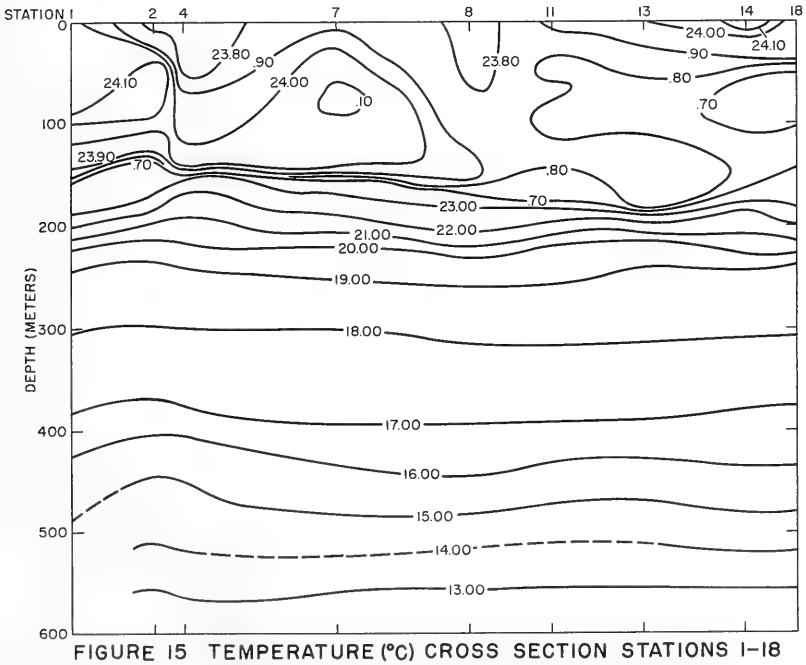

FIGURE 15 TEMPERATURE (°C) CROSS SECTION STATIONS 1-18

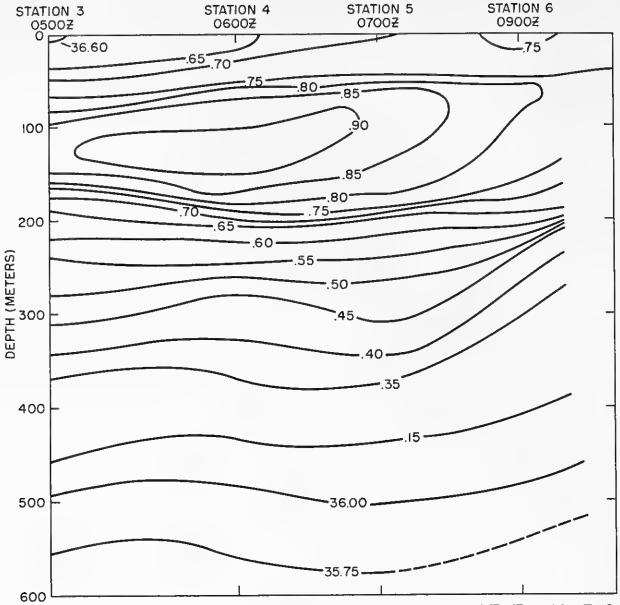

FIGURE 16 SALINITY (‰) CROSS SECTION STATIONS 3-6
16 MARCH 1960

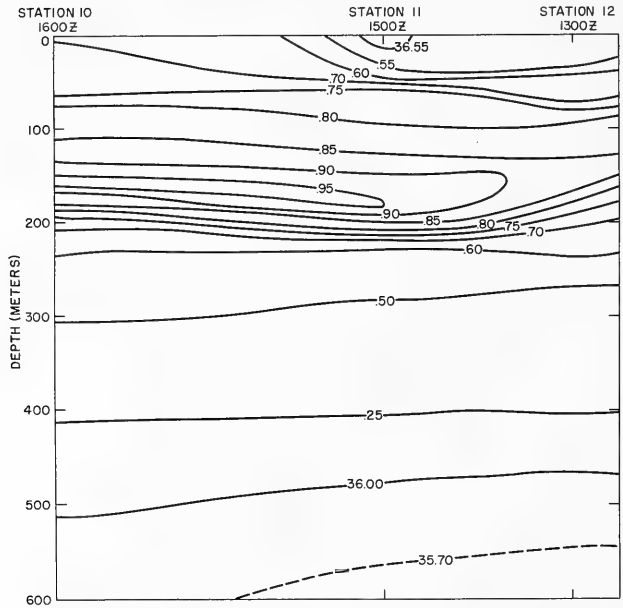

FIGURE 17 SALINITY (‰) CROSS SECTION STATIONS 10-12
18 MARCH 1960

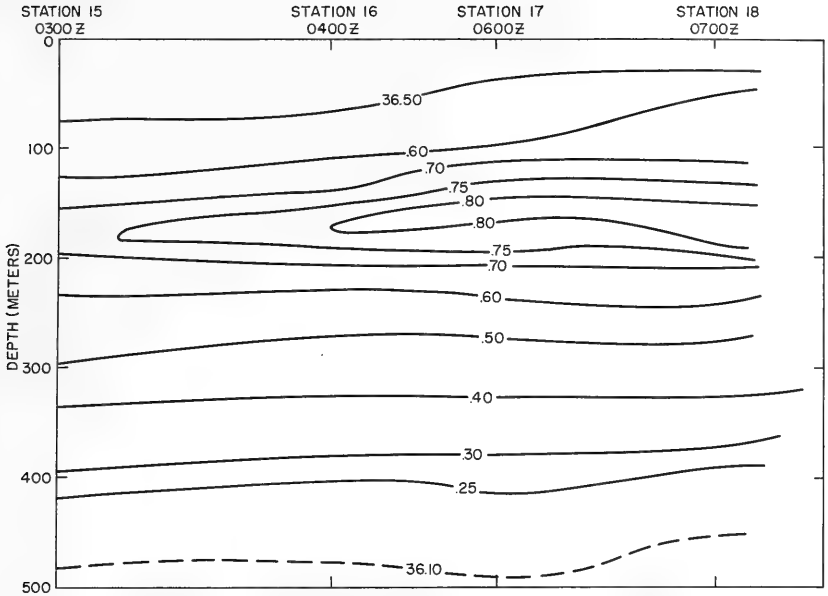

FIGURE 18 SALINITY(‰)CROSS SECTION STATIONS 15–18
19 MARCH 1960

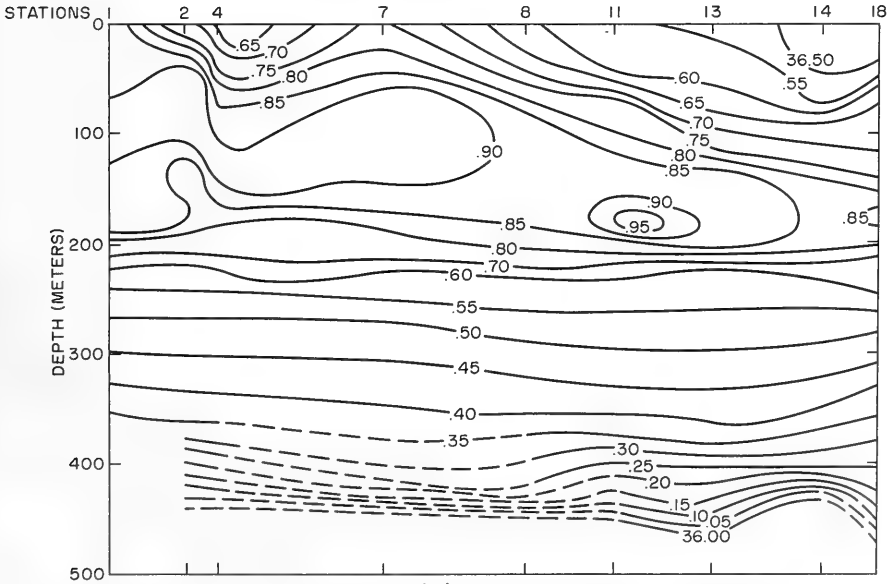

FIGURE 19 SALINITY (‰) CROSS SECTION STATIONS 1–18

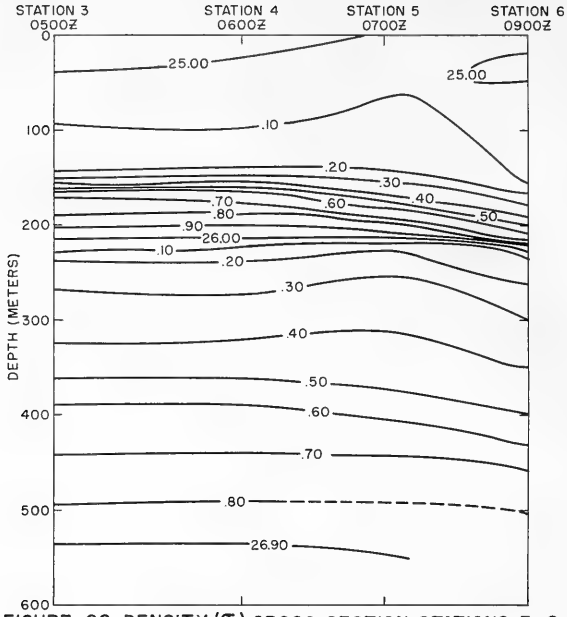

FIGURE 20 DENSITY (σ_t) CROSS SECTION STATIONS 3-6
16 MARCH 1960

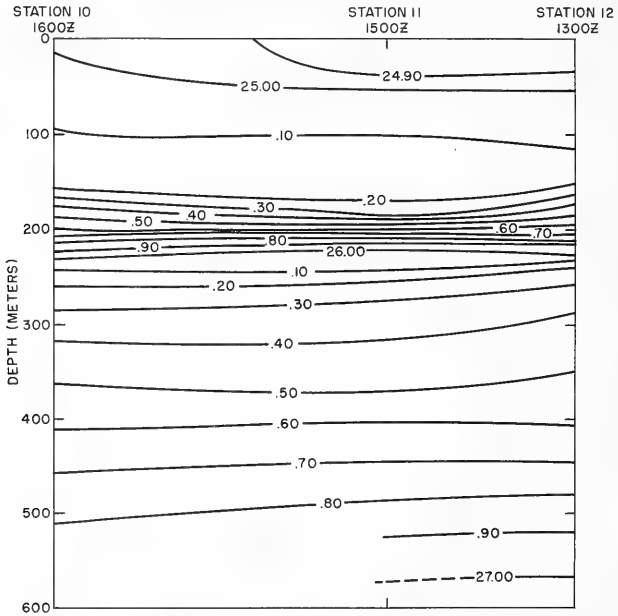

FIGURE 21 DENSITY (σ_t) CROSS SECTION STATIONS 10-12
18 MARCH 1960

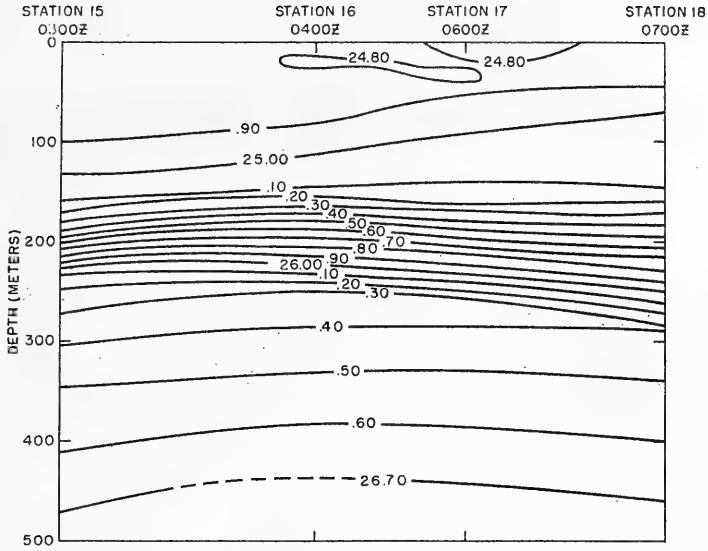

FIGURE 22 DENSITY(σ_t)CROSS SECTION STATIONS 15-18
19 MARCH 1960

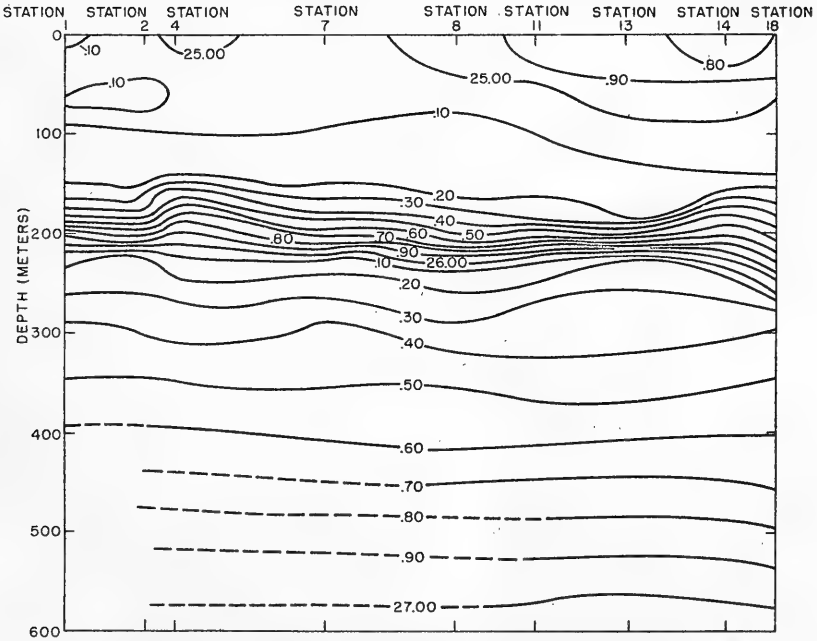

FIGURE 23 DENSITY(σ_t)CROSS SECTION STATIONS 1-18

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3. University of Miami, The Marine Laboratory, Oceanographic Survey of the Tongue of the Ocean - OPERATION TOTO, Vol. I, Sept. 1958, Miami.

4. U. S. Navy Hydrographic Office, Oceanographic Data Report, Tongue of the Ocean (ASWEPS) Survey, December 1959, H. O. Misc. 16782-11, March 1960, USNHO, Washington 25, D. C.

APPENDIX I

SIMULTANEOUS TEMPERATURE OBSERVATIONS AT MEAN DEPTH OF THERMOCLINE TO STUDY INTERNAL WAVES

APPENDIX I
SIMULTANEOUS TEMPERATURE OBSERVATIONS AT MEAN DEPTH OF THERMOCLINE TO STUDY INTERNAL WAVES

In planning a survey of temperatures to observe the effect of internal wave movement, some assumption about the speed of propagation must be made. Three sources of value are available:

1. E. C. LaFond of USNEL has attributed the movement of surface sea slicks to the passage of internal waves with resulting water convergence at the surface just behind the crest of the internal wave. In shallow water (approximately 50 feet) off the California coast these slicks have been observed to travel at 30 feet per minute.

2. Preliminary inspection of the 3-buoy temperature records made at Texas Tower No. 4 indicates a speed of internal wave propagation of approximately 100 feet per minute.

3. Assuming these waves are gravity waves at the interface between two different homogeneous water layers, speed has been calculated from the formula (Lamb, 1945):

$$c = \sqrt{\frac{(\rho-\rho')\, g/k}{\rho' \coth kh' + \rho \coth kh}}$$

where ρ = density of water in lower layer

ρ' = density of water in upper layer

h = thickness of lower layer

h' = thickness of upper layer

$k = \frac{2\pi}{\lambda}$ where λ = wave length

In TOTO, 29°C and 36.7°/oo were used for the upper layer, ρ' = 1.02336. The mixed layer is said to fluctuate between 175 and 300 feet; h' was taken

as 300 feet and h as 3600 feet. The speed of propagation increases with increasing wave length according to the formula; values range from 9 feet per minute for 4.5-foot waves (the smallest which can just be observed with a 15 sec/cycle time on our recorder) to a maximum of 190 feet per minute for 3000-foot (or greater) waves.

OBSERVATIONAL NETWORK:

As the internal waves, which will be measured, will vary from one lunar day (24.84 hours) to approximately one minute, wave lengths will range from 50 miles to approximately 20 feet. To determine the vector, K (whose direction is the direction of propagation and whose magnitude is "wave number") as great a spacing of observations as possible is desirable. However, this spacing can be no greater than $\frac{\lambda}{2}$ Therefore, 3 different triangular spacings of the temperature sensors used are suggested:

SPACING (FEET)	VELOCITY CALCULATED FROM GRAVITY WAVE EQUATION ft/min	SHORTEST WAVE PERIOD (MINUTES) WHICH WILL BE DETECTED ASSUMING: 30 ft/min	100 ft/min
10	1	3/4	< 1/2
200	5	13	4
1730	25	120	35

The duration of the continuous observation period should be at least a week or more to pick up the tidal cycles.

The depth of the thermal sensors should be at the mean depth of the

thermocline as determined by several BT obs over at least a 2-hour period.

METHOD OF ANALYSIS:

The method will be by Fourier analysis as follows, in addition to single station power spectrum analysis. Four assumptions are made:

1. The three resistance thermometers are located at the same depth near the average mid-depth of the thermocline and are sufficiently restrained from swinging as a pendulum to maintain a fixed position despite horizontal currents.

2. The vertical movement of the thermocline is never great enough to cause the sensors to be in either the mixed surface layer or in the bottom layer of small vertical temperature gradient.

3. The vertical temperature gradient within the thermocline is constant.

4. Progressive internal wave components in the area have infinite crests of constant amplitude but each component moves independently.

Under these assumptions, the temperature measured by each thermometer during an interval of record "T" can be approximated by a Fourier Series plus a constant term:

$$T(x,y,t) = \overline{T} + \sum_{n=1}^{\infty} C_n \cos\left(K_{1n}X + K_{2n}y - \frac{2\pi nt}{T} - \delta_n\right)$$

where: $K_{1n}^2 + K_{2n}^2 = K_n^2 = \left(\frac{2\pi}{\lambda_n}\right)^2$ = square of wave number of n^{th} component

λ_n = wave length of n^{th} component

$K_{1n} = K_n \cos\theta_n$

$K_{2n} = K_n \sin\theta_n$

θ_n = direction of normal to n^{th} infinite crested wave component

$C_n^2 = a_n^2 + b_n^2$ = square of amplitude of n^{th} component

$\delta_n = \tan^{-1} b_n/a_n$ = phase of n^{th} component

Expanding twice:

$$T(x,y,t)=\overline{T}+\sum_{n=1}^{\infty} C_n \cos(K_{1n}X+K_{2n}y)\cos\left(\frac{2\pi nt}{T}+\delta_n\right)+C_n \sin(K_{1n}X+K_{2n}y)\sin\left(\frac{2\pi nt}{T}+\delta_n\right)$$

$$=\overline{T}+\sum_{n=1}^{\infty}\cos(K_{1n}X+K_{2n}y)\,C_n\left[\cos\frac{2\pi nt}{T}\cos\delta_n-\sin\frac{2\pi nt}{T}\sin\delta_n\right]+\sin(K_{1n}X+K_{2n}y)\,C_n$$

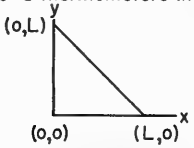
$$\left[\sin\frac{2\pi nt}{T}\cos\delta_n+\cos\frac{2\pi nt}{T}\sin\delta_n\right]$$

Substituting $a_n=C_n\cos\delta_n \quad b_n=C_n\sin\delta_n$

$$T(x,y,t)=\overline{T}+\sum_{n=1}^{\infty}\cos(K_{1n}X+K_{2n}y)\left[a_n\cos\frac{2\pi nt}{T}-b_n\sin\frac{2\pi nt}{T}\right]+\sin(K_{1n}X+K_{2n}y)$$

$$\left[a_n\sin\frac{2\pi nt}{T}+b_n\cos\frac{2\pi nt}{T}\right]$$

Example: 3 thermometers in right triangle



Let $L=\frac{1}{2}$ shortest wave length to be measured

$$T(o,o,t)=\underset{\text{OF TEMPERATURE}}{\overset{\text{TIME SERIES}}{\text{AT ORIGIN}}}=\overline{T}+\sum_{n=1}^{\infty}a_n\cos\frac{2\pi nt}{T}-b_n\sin\frac{2\pi nt}{T}$$

Solving for a specific value a_ℓ of a_n by multiplying both sides by $\cos\frac{2\pi\ell t}{T}\,dt$ and integrating from t=o to t=T the term with $\overline{T}$ is zero at both limits of integration since ℓ is a specific integer, the integrand from the right hand portion of the summation becomes $-b_n\sin\frac{2\pi nt}{T}\cos\frac{2\pi\ell t}{T}$ which can also be expressed as $-\frac{b_n}{2}\sin\frac{2\pi nt+2\pi\ell t}{T}-\frac{b_n}{2}\sin\frac{2\pi nt-2\pi\ell t}{T}$ which when integrated with limits of t=o and t=T becomes zero for every value of n, and the integrand of the left hand term in the summation gives the only contribution and at that only for $n=\ell$:

$$\int_o^T T(o,o,t)\cos\frac{2\pi\ell t}{T}\,dt=\sum_{n=1}^{\infty}\int_o^T a_n\cos\frac{2\pi nt}{T}\cos\frac{2\pi\ell t}{T}\,dt$$

$$=\sum_{n=1}^{\infty}\int_o^T\frac{a_n}{2}\left[\cos\frac{2\pi}{T}(n+\ell)t+\cos\frac{2\pi}{T}(n-\ell)t\right]dt$$

All integrals of this summation are zero except for $n=\ell$:

$$=\frac{a_\ell}{2}\int_o^T\left[\cos\frac{4\pi\ell t}{T}+\cos 0\right]dt=\frac{a_\ell}{2}\,T$$

$$a_\ell=\frac{2}{T}\int_o^T T(o,o,t)\cos\frac{2\pi\ell t}{T}\,dt$$

Similiarly solving for b_ℓ by multiplying both sides by $\sin\frac{2\pi\ell t}{T}\,dt$ and integrating from t=o to t=T:

$$b_\ell=-\frac{2}{T}\int_o^T T(o,o,t)\sin\frac{2\pi\ell t}{T}\,dt$$

Use $T(L,o,t) = \underset{\text{AT POINT } (L,o)}{\overset{\text{TIME SERIES}}{\text{OF TEMPERATURES}}} = \overline{T} + \sum_{n=1}^{\infty} \left[a_n \cos K_{1n} L + b_n \sin K_{1n} L\right] \cos \frac{2\pi nt}{T} + \left[a_n \sin K_{1n} L - b_n \cos K_{1n} L\right] \sin \frac{2\pi nt}{T}$

Solving for Fourier coefficients for a specific value ℓ of n in a similiar manner to preceding:

$$a_\ell \cos K_{1\ell} L + b_\ell \sin K_{1\ell} L = \frac{2}{T} \int_0^T T(L,o,t) \cos \frac{2\pi \ell t}{T} \, dt$$

$$a_\ell \sin K_{1\ell} L - b_\ell \cos K_{1\ell} L = \frac{2}{T} \int_0^T T(L,o,t) \sin \frac{2\pi \ell t}{T} \, dt$$

Knowing a_ℓ and b_ℓ solve these simultaneous equations for $\sin K_{1\ell}$ and $\cos K_{1\ell}$ and thereby evaluate $K_{1\ell}$

Use $T(o,L,t) = \underset{\text{AT POINT } (O,L)}{\overset{\text{TIME SERIES}}{\text{OF TEMPERATURES}}} = \overline{T} + \sum_{n=1}^{\infty} \left[a_n \cos K_{2n} L + b_n \sin K_{2n} L\right] \cos \frac{2\pi nt}{T} + \left[a_n \sin K_{2n} L - b_n \cos K_{2n} L\right] \sin \frac{2\pi nt}{T}$

Again solving for Fourier coefficients for a specific value ℓ of n:

$$a_\ell \cos K_{2\ell} L + b_\ell \sin K_{2\ell} L = \frac{2}{T} \int_0^T T(o,L,t) \cos \frac{2\pi \ell t}{T} \, dt$$

$$a_\ell \sin K_{2\ell} - b_\ell \cos K_{2\ell} L = \frac{2}{T} \int_0^T T(o,L,t) \sin \frac{2\pi \ell t}{T} \, dt$$

Solve for $\sin K_{2\ell}$ and $\cos K_{2\ell}$ and thereby evaluate $K_{2\ell}$

Using $K_{1\ell}^2 + K_{2\ell}^2 = K_\ell^2$ solve for K_ℓ

Solve for $\theta_\ell = \cos^{-1} \frac{K_{1\ell}}{K_\ell}$

$= \sin^{-1} \frac{K_{2\ell}}{K_\ell}$

APPENDIX II

BATHYTHERMOGRAPH OBSERVATIONS

Depths in feet - temperatures ($0.1^{o}F$)

DAY	TIME GMT	POSITION LATITUDE	POSITION LONGITUDE	SURF WATER TEMP	WIND DIR (TRUE)	WIND SPEED (KNOTS)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS TYPE	CLOUDS AMOUNT	CLOUDS BASE	CLOUDS TOP	SEA WAVE HEIGHT	SEA WAVE PERIOD	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
6	1900	2435	7734	737	06	07	770	654	84	25	00	00	02	02	748	748	747	747	747	747	747	747	748	748	750	753	753	753	753	753	753	753	753	756	755	755	755	755	752	737	706	674	667		
6	1925	2435	7734	745	06	07	770	654	84	25	00	00	02	02	748	748	747	744	743	743	744	744	744	744	744	744	744	744	744	744	744	744	744	745	746	746	746	745	743	740	727	711	678	661	658
6	2010	2435	7734	744	06	07	755	620	85	26	00	00	02	02	750	750	750	749	749	749	748	748	748	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	746	733	725	689	665	660	657
6	2045	2435	7734	743	05	08	718	630	86	27	00	00	02	02	746	746	745	745	744	743	743	743	743	743	743	743	743	743	743	743	743	743	743	745	745	745	744	744	740	725	702	673	660	656	652
6	2125	2435	7734	740	05	08	718	630	86	27	00	00	02	02	747	747	747	747	744	743	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	739	724	704	675	659	656	652
6	2200	2435	7734	735	03	09	685	608	86	28	00	00	02	02	748	748	748	748	745	744	743	743	743	743	743	743	743	743	744	745	745	745	745	745	745	745	744	742	737	723	705	679	660	657	654
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6	2330	2435	7734	735	05	06	680	617	86	27	00	00	03	02	746	746	746	746	746	744	743	743	743	743	743	743	743	743	743	743	744	745	745	745	746	745	743	743	741	737	723	707	669	658	657	656
7	0000	2435	7734	740	05	08	670	600	86	27	00	00	03	02	746	746	746	746	745	744	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	741	733	723	710	675	659	656	654
7	0030	2435	7734	735	05	08	670	600	86	27	00	00	03	02	746	746	746	746	744	743	743	743	743	743	743	743	743	743	743	743	744	744	744	744	744	743	743	743	742	737	724	710	678	661	658	656
7	0100	2435	7734	737	05	10	678	607	84	25	00	00	03	02	746	746	746	746	745	743	742	742	742	742	742	742	742	742	743	743	743	744	744	744	744	743	743	743	740	735	725	711	680	660	656	653
7	0130	2435	7734	740	05	10	678	607	84	25	00	00	03	02	746	746	746	746	745	744	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	741	738	727	710	680	661	656	654
7	0200	2435	7734	738	07	10	681	615	85	26	00	00	03	02	746	746	746	746	746	745	744	744	743	743	743	743	742	742	743	743	743	744	743	744	743	743	743	743	741	738	728	711	680	666	659	654
7	0230	2435	7734	737	07	10	681	615	85	26	00	00	03	02	747	747	747	747	746	745	744	744	743	743	743	743	743	743	743	743	744	744	744	744	744	743	743	743	742	738	728	711	680	666	659	654
7	0300	2435	7734	738	07	10	681	612	82	23	00	00	03	02	746	746	746	746	746	745	744	743	743	743	743	743	743	743	743	743	743	743	743	744	744	744	743	743	743	737	728	714	682	667	659	654
7	0330	2435	7734	740	07	10	681	612	82	23	00	00	03	02	746	746	746	746	746	745	743	743	742	742	742	742	742	742	742	742	743	743	743	744	742	742	745	742	737	730	711	682	666	659	655	
7	0400	2435	7734	740	07	10	681	607	84	25	00	00	03	02	746	746	746	746	746	745	744	744	743	743	743	743	743	743	743	743	743	743	743	744	742	742	744	742	738	732	710	682	664	657	654	
7	0430	2435	7734	740	07	10	681	607	84	25	00	00	03	02	746	746	746	746	746	745	744	744	743	743	743	743	742	742	742	743	743	743	744	742	743	743	746	744	741	731	712	680	663	656	653	
7	0500	2435	7734	740	12	08	682	603	84	25	00	00	03	02	746	746	746	746	746	745	743	743	743	743	743	743	742	742	742	742	743	743	744	745	742	743	743	746	745	740	731	714	681	662	656	654
7	0530	2435	7734	740	12	08	682	603	84	25	00	00	03	02	746	746	746	745	745	744	744	743	743	743	742	742	742	742	742	743	743	744	744	745	742	742	743	746	742	740	732	715	677	659	655	
7	0600	2435	7734	735	10	09	680	604	86	27	00	00	03	02	746	746	746	746	746	746	746	745	745	745	744	744	744	744	744	746	746	746	744	744	744	746	746	743	740	732	711	680	660	654		
7	0630	2435	7734	740	10	09	680	604	86	27	00	00	03	02	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	747	747	747	745	745	745	745	743	740	730	714	682	659	654	651	
7	0700	2435	7734	740	10	10	675	604	83	24	00	00	03	02	745	745	745	745	745	745	745	745	745	745	745	744	744	744	744	745	746	745	744	744	744	745	745	743	740	731	711	680	658	652		
7	0730	2435	7734	740	10	10	675	604	83	24	00	00	03	02	746	745	745	745	746	746	746	745	745	745	745	744	744	744	744	744	745	745	743	743	743	745	745	741	740	732	710	680	658	654		
7	0800	2435	7734	737	10	11	674	604	83	24	00	00	03	02	744	744	744	744	744	744	744	744	744	744	744	745	745	744	744	744	744	445	746	745	745	745	745	744	741	740	731	700	680	659	656	
7	0830	2435	7734	735	10	11	674	604	83	24	00	00	03	02	745	745	745	745	745	745	745	745	745	745	744	745	745	745	745	744	744	746	744	744	744	744	744	742	740	730	700	680	660	655		
7	0900	2435	7734	735	10	10	681	613	81	22	00	00	03	02	744	744	744	744	744	744	744	744	744	744	744	744	744	744	743	743	743	743	746	745	744	744	744	744	743	740	732	703	675	663	654	
7	0930	2435	7734	735	10	10	681	613	81	22	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	743	743	742	742	741	741	742	744	743	742	741	741	741	741	740	732	709	680	660	656	
7	1000	2435	7734	735	07	13	681	615	81	22	00	00	03	02	744	744	744	744	744	744	744	744	744	743	743	743	743	742	742	742	742	743	743	741	741	741	741	741	740	730	708	685	661	657		
7	1030	2435	7734	737	07	13	681	615	81	22	00	00	03	02	744	744	744	744	744	744	744	744	744	744	744	744	744	743	743	743	743	743	745	743	743	743	743	742	742	742	741	731	708	681	661	655	
7	1100	2435	7734	740	07	12	682	615	81	22	00	00	03	02	744	744	744	744	744	744	744	744	744	744	744	744	744	743	743	743	743	743	745	743	743	743	743	743	741	735	710	685	664	657		
7	1130	2435	7734	740	07	12	682	615	81	22	00	00	03	02	744	744	744	744	744	744	744	744	744	744	744	744	744	743	742	742	742	742	743	743	742	741	741	741	741	740	735	716	690	663	658	652
7	1200	2435	7734	742	09	09	690	615	82	22	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	743	743	742	741	741	741	740	742	742	741	741	741	741	740	738	730	712	690	662	654	652
7	1230	2435	7734	743	09	09	690	615	82	22	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	743	743	742	741	741	741	741	742	741	741	741	741	741	739	729	716	696	663	656	652	
7	1300	2435	7734	732	10	08	700	624	72	63	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	743	743	743	742	741	741	743	742	741	741	742	742	741	734	719	695	664	656	652		
7	1330	2435	7734	738	10	08	700	624	72	63	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	743	743	742	741	740	740	740	740	741	740	740	740	740	736	719	706	668	657	652		
7	1400	2435	7734	741	08	07	700	624	63	43	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	743	743	742	742	742	742	742	742	742	742	742	742	742	741	720						
7	1700	2435	7734	755	07	08	720	635	82	23	00	00	02	02	746	744	743	743	743	743	743	743	743	743	743	743	743	742	742	741	740	740	740	740	741	742	742	742	742	742	738	720	690	669	658	
7	1715	2435	7734	755	07	08	720	635	82	23	00	00	02	02	747	744	743	743	743	743	743	743	743	743	743	743	743	742	741	741	741	740	740	740	740	742	743	743	742	742	737	719	691	669	658	

BATHYTHERMOGRAPH DATA

TONGUE OF THE OCEAN

MARCH 1960

DAY	TIME GMT HOUR	TIME GMT MINUTES	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (TRUE)	WIND SPEED (KNOTS)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS PERCENT SKY COVER	CLOUDS LOW TYPE	CLOUDS LOW AMOUNT	CLOUDS MIDDLE TYPE	CLOUDS MIDDLE AMOUNT	CLOUDS HIGH TYPE	CLOUDS HIGH AMOUNT	SEA HEIGHT (FEET)	SEA PERIOD (SECONDS)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
7	1730	2435	7734		753	07	08	720	635	82	23	00	00	02	02	746	745	744	744	744	743	743	743	743	743	743	742	742	742	742	741	740	740	740	742	744	744	743	742	739	719	690	668	658	656	656
7	1745	2435	7734		750	07	08	720	635	82	23	00	00	02	02	744	743	743	743	743	743	743	743	743	743	743	743	741	741	741	741	740	740	740	740	744	744	743	743	742	738	719	688	667	658					
7	1800	2435	7734		751	08	08	728	643	83	24	00	00	02	02	745	743	743	743	743	743	743	743	743	743	743	743	741	741	740	740	740	740	740	740	741	742	742	742	742	734	718	689	668	658					
7	1815	2435	7734		751	08	08	728	643	83	24	00	00	02	02	747	745	744	743	743	743	743	743	743	743	743	743	743	742	741	740	740	740	740	740	740	743	743	742	743	743	729	716	688	666	659				
7	1830	2435	7734		750	08	08	728	643	83	24	00	00	02	02	747	744	744	744	744	744	744	744	744	744	744	744	744	742	741	741	740	740	740	740	740	743	746	744	745	745	725	715	688	666	659	656			
7	1845	2435	7734		750	08	08	728	643	83	24	00	00	02	02	744	744	743	743	742	743	742	742	742	742	743	742	741	740	740	740	739	740	740	740	743	741	741	743	743	726	718	680	665	659	652	651			
7	1900	2435	7734		751	09	08	729	641	83	24	00	00	02	02	746	745	744	744	743	742	742	742	742	742	742	742	741	741	741	740	740	740	741	740	741	741	740	742	740	725	715	684	664	659	651				
7	1915	2435	7734		749	09	08	729	641	83	24	00	00	02	02	749	748	746	745	745	745	744	744	744	744	743	742	741	740	740	740	740	741	741	740	740	740	740	741	743	728	719	684	664	658	651				
7	1930	2435	7734		750	09	08	729	641	83	24	00	00	02	02	748	747	745	745	744	744	745	745	744	744	743	743	742	742	741	741	741	741	741	741	741	743	744	745	742	728	716	677	672	657					
7	1945	2435	7734		750	09	08	729	641	83	24	00	00	02	02	748	746	745	745	745	744	743	743	743	743	743	743	742	741	740	740	740	740	740	740	740	741	744	743	742	726	709	679	664	657					
7	2000	2435	7734		750	10	10	720	631	82	23	00	00	02	02	750	748	746	745	745	744	744	743	742	744	743	743	742	742	742	741	741	741	741	741	740	740	740	740	742	728	704	678	665	658					
7	2015	2435	7734		750	10	10	720	631	82	23	00	00	02	02	750	747	746	745	743	744	743	743	742	742	742	740	741	741	741	741	741	741	741	741	742	743	743	742	728	700	675	663	658					
7	2030	2435	7734		750	10	10	720	631	82	23	00	00	02	02	750	746	744	744	743	743	742	742	740	740	740	740	740	742	741	740	740	740	740	740	740	740	740	740	742	726	699	674	663	658					
7	2045	2435	7734		750	10	10	720	631	82	23	00	00	02	02	750	746	745	743	743	743	742	742	741	741	741	741	741	740	740	740	741	741	741	741	741	741	743	744	743	728	699	671	661	657					
7	2100	2435	7734		750	10	10	718	626	81	22	00	00	03	02	750	749	748	748	748	748	748	748	748	748	748	748	747	745	744	744	745	745	745	745	745	744	746	747	745	732	709	677	664	659	655				
7	2115	2435	7734		750	10	10	718	626	81	22	00	00	03	02	747	745	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	744	744	744	740	728	703	673	662	657	652				
7	2130	2435	7734		750	10	10	718	626	81	22	00	00	03	02	748	748	745	745	745	745	744	744	744	744	744	743	743	742	742	741	742	742	742	742	742	743	744	743	742	728	704	671	660	656					
7	2145	2435	7734		750	10	10	718	626	81	22	00	00	03	02	748	748	746	746	746	746	745	744	744	744	744	743	743	743	743	743	743	743	743	743	743	743	745	745	742	730	705	676	663	659					
7	2200	2435	7734		750	09	10	730	638	83	24	00	00	03	02	748	748	745	743	743	743	743	743	743	743	743	743	743	743	743	743	742	742	742	742	742	742	743	743	739	728	703	669	661	654	650				
7	2215	2435	7734		751	09	10	730	638	83	24	00	00	03	02	748	748	745	745	745	745	745	745	745	745	744	744	744	744	744	743	743	743	743	744	745	745	745	741	728	709	678	663	655	653					
7	2230	2435	7734		749	09	10	730	638	83	24	00	00	03	02	748	748	748	745	745	745	745	745	745	745	744	744	744	744	743	743	743	743	743	744	745	745	745	742	729	705	676	663	655	653					
7	2245	2435	7734		750	09	10	730	638	83	24	00	00	03	02	748	748	747	746	744	744	743	743	743	743	743	743	743	742	742	742	742	742	743	743	743	744	744	740	729	700	669	662	655	651					
7	2300	2435	7734		750	09	04	713	632	83	24	00	00	03	02	748	747	745	744	744	744	743	743	743	743	743	743	742	742	742	742	742	742	742	742	743	743	743	740	729	700	673	661							
7	2315	2435	7734		750	09	04	713	632	83	24	00	00	03	02	748	748	748	745	744	744	743	743	743	743	743	743	743	743	743	743	743	742	742	743	744	745	745	745	741	730	698	668	661	654					
7	2330	2435	7734		750	09	04	713	632	83	24	00	00	03	02	748	747	747	745	744	744	744	744	744	744	744	744	744	744	744	744	743	743	743	743	743	744	745	745	745	742	729	698	668	662					
7	2345	2435	7734		750	09	04	713	632	83	24	00	00	03	02	748	748	748	748	748	744	744	744	744	744	744	744	744	743	742	742	742	742	742	742	742	743	744	744	744	742	730	700	671	661	654				
8	0015	2435	7734		750	09	05	712	640	83	24	00	00	02	02	746	746	746	746	746	744	744	744	744	743	743	743	743	742	742	742	742	742	742	742	743	745	745	744	743	732	699	671	664						
8	0030	2435	7734		747	09	05	712	640	83	24	00	00	02	02	748	748	748	748	745	745	744	744	744	744	744	744	744	743	743	743	743	743	743	743	744	745	745	743	741	731	694	670	661	654					
8	0045	2435	7734		746	09	05	712	640	83	24	00	00	02	02	744	744	744	744	743	743	743	743	743	743	743	743	743	743	743	743	742	742	743	743	744	745	745	745	743	732	695	673	665	657					
8	0100	2435	7734		746	09	09	720	652	83	24	00	00	02	01	745	745	745	745	745	744	744	744	744	744	744	744	744	742	742	742	742	742	742	743	743	745	746	744	742	732	691	672	665	657					
8	0115	2435	7734		746	09	09	720	652	83	24	00	00	02	01	747	746	746	745	746	745	745	745	745	743	742	743	743	743	742	742	742	742	742	743	744	746	746	745	742	732	690	675	664	658					
8	0130	2435	7734		745	09	09	720	652	83	24	00	00	02	01	746	746	746	746	746	744	744	743	742	742	742	742	742	742	742	741	741	742	742	744	747	747	745	742	733	689	674	665	658						
8	0145	2435	7734		747	09	09	720	652	83	24	00	00	02	01	744	744	744	744	744	743	743	742	742	742	742	742	742	742	741	741	741	741	741	742	744	747	747	744	742	733	688	673	665	659					
8	0200	2435	7734		747	11	13	715	649	87	28	00	00	03	02	744	744	744	743	743	743	743	742	742	742	742	742	742	741	741	741	741	741	741	742	743	748	747	747	744	734	689	672	664	657					
8	0215	2435	7734		747	11	13	715	649	87	28	00	00	03	02	748	747	747	747	747	747	746	746	745	745	745	744	743	743	743	742	742	742	742	743	747	749	749	748	746	739	695	678	667	658					
8	0230	2435	7734		745	11	13	715	649	87	28	00	00	03	02	749	748	748	748	748	748	748	747	746	745	745	745	745	744	743	724	742	742	742	742	747	749	748	748	747	738	690	679	668	659					
8	0245	2435	7734		745	11	13	715	649	87	28	00	00	03	02	748	748	748	748	747	747	747	746	746	746	746	745	745	744	743	743	743	743	743	744	746	750	749	748	748	735	694	680	668	659					
8	0300	2435	7734		745	11	11	718	648	83	24	00	00	03	02	748	748	748	747	747	747	746	746	746	746	746	746	745	745	744	744	743	743	743	744	746	749	748	748	748	738	691	679	669	660					
8	0315	2435	7734		745	11	11	718	648	83	24	00	00	03	02	748	748	748	747	746	747	748	748	747	746	746	746	745	744	744	743	743	742	742	743	745	749	748	748	748	731	690	679	669	660					

DAY	TIME GMT	POSITION				SURF WATER TEMP	WIND		AIR TEMPERATURE		CLOUDS						SEA		TEMPERATURES AT DEPTH																				
		LATITUDE		LONGITUDE			DIRECTION (10 DEG)	SPEED (KTS)	DRY BULB (0.1°F)	WET BULB (0.1°F)	TYPE LOW	AMOUNT LOW	TYPE MED	AMOUNT MED	TYPE HIGH	AMOUNT HIGH	HEIGHT (FEET)	PERIOD (SEC)	000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
	HOUR	MINUTES	DEGREES	MINUTES	DEGREES	MINUTES																																		
8	0345	2435	7734	745	11	11	718	648	83	24	00	00	03	02	748	748	747	747	746	746	746	745	745	745	745	745	745	744	744	743	742	742	742	743	745	749	748	748	748	731	690	675	669	659					
8	0400	2435	7734	745	11	11	710	649	83	24	00	00	03	02	748	748	747	747	747	747	747	746	746	746	746	745	745	744	744	743	743	742	742	743	747	750	749	748	748	728	690	678	669	660					
8	0415	2435	7734	745	11	11	710	649	83	24	00	00	03	02	748	748	747	747	746	747	747	746	745	744	744	743	743	743	743	743	742	742	742	743	746	749	748	748	747	729	690	679	669	659					
8	0430	2435	7734	745	11	11	710	649	83	24	00	00	03	02	748	747	747	746	746	746	746	746	745	745	745	744	744	743	743	742	742	742	742	743	743	747	749	748	748	748	726	691	679	669	659				
8	0445	2435	7734	745	11	11	710	649	83	24	00	00	03	02	748	747	746	745	745	745	745	745	745	745	744	744	743	743	742	742	742	742	742	744	747	749	748	748	748	724	690	677	669	659					
8	0500	2435	7734	745	09	10	710	646	83	24	00	00	03	02	748	748	747	747	747	747	747	747	747	747	746	745	744	743	742	742	742	742	742	743	746	747	748	747	746	728	689	678	670	659					
8	0515	2435	7734	747	09	10	710	646	83	24	00	00	03	02	748	747	747	747	746	746	746	745	745	745	746	745	744	743	743	743	742	742	742	742	743	743	746	746	746	745	724	689	677	669	659				
8	0530	2435	7734	749	09	10	710	646	83	24	00	00	03	02	747	746	744	744	744	743	743	744	744	744	743	743	742	742	742	742	742	742	742	743	745	744	746	747	744	724	687	674	669	659					
8	0600	2435	7734	749	12	10	710	648	83	24	00	00	02	02	745	745	745	745	744	744	744	744	743	743	743	743	743	743	743	743	742	742	743	743	744	745	745	746	744	744	709	672	664	658					
8	0615	2435	7734	748	12	10	710	648	83	24	00	00	02	02	746	746	746	746	746	746	746	747	747	747	746	746	745	745	745	745	745	745	746	746	746	747	747	748	747	730	700	679	669	660					
8	0630	2435	7734	748	12	10	710	648	83	24	00	00	02	02	746	746	746	746	746	747	747	746	746	746	746	745	745	745	745	744	744	743	743	745	745	745	746	746	746	723	692	674	668	659					
8	0645	2435	7734	746	11	10	710	645	83	24	00	00	02	02	746	746	746	746	746	746	747	747	747	747	746	746	746	745	745	745	744	744	745	746	745	746	746	745	746	730	691	675	667	660					
8	0700	2435	7734	746	11	10	710	645	83	24	00	00	02	02	747	747	747	747	747	747	747	747	747	747	747	746	746	746	745	745	745	745	745	746	747	747	747	746	745	730	690	674	668	660					
8	0715	2435	7734	746	11	10	710	645	83	24	00	00	02	02	747	747	747	747	747	747	747	747	747	747	747	745	745	746	745	745	744	744	744	746	746	746	747	746	745	730	690	674	669	659					
8	0730	2435	7734	747	11	10	710	645	83	24	00	00	02	02	747	747	747	747	747	747	747	747	747	747	747	747	746	746	746	746	745	745	744	746	746	747	747	746	743	722	689	674	668	658					
8	0745	2435	7734	746	12	10	708	648	83	24	00	00	02	02	747	747	747	747	747	747	747	747	747	747	747	746	746	746	746	746	746	746	746	746	746	746	747	746	744	722	688	674	666	657					
8	0800	2435	7734	746	12	10	708	648	83	24	00	00	02	02	746	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	746	745	745	746	746	747	747	745	743	720	688	673	667	659				
8	0815	2435	7734	746	12	10	708	648	83	24	00	00	02	02	746	746	746	746	746	746	746	746	746	746	746	745	745	745	745	745	745	744	744	745	745	744	746	744	743	720	683	672	664	658					
8	0830	2435	7734	748	12	10	708	648	83	24	00	00	03	02	748	748	748	748	748	748	748	748	748	748	748	746	746	746	745	745	744	744	744	745	746	746	747	744	743	720	684	672	664	658					
8	0845	2435	7734	748	12	09	709	649	83	24	00	00	02	02	747	747	747	747	747	747	747	477	746	746	746	746	746	746	745	745	744	744	745	746	747	748	748	746	744	720	683	670	661	658					
8	0900	2435	7734	747	12	09	709	649	83	24	00	00	02	02	748	748	748	748	748	748	748	748	748	748	748	746	747	747	746	745	744	744	745	745	745	748	749	748	747	720	683	670	662	658					
8	0915	2435	7734	746	12	09	709	649	83	24	00	00	02	02	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	745	745	745	747	748	748	748	747	720	682	670	662	658					
8	0930	2435	7734	746	12	09	709	649	83	24	00	00	02	02	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	746	746	746	747	747	749	749	749	749	710	682	669	662	658	652				
8	0945	2435	7734	747	12	09	705	648	83	24	00	00	02	02	748	748	748	748	748	748	748	748	748	748	748	745	745	745	745	745	744	744	744	747	748	749	748	745	705	682	671	662	658						
8	1000	2435	7734	746	12	09	705	648	83	24	00	00	02	02	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	746	745	745	745	746	748	749	749	747	700	682	669	661	657					
8	1015	2435	7734	748	12	09	705	648	83	24	00	00	02	02	747	747	747	747	747	748	748	748	748	748	747	747	746	746	746	746	745	745	745	745	747	748	748	747	746	700	681	669	660	658	652				
8	1030	2435	7734	748	12	09	705	648	83	24	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	742	742	742	742	745	746	746	744	742	700	678	665	658	653	648			
8	1045	2435	7734	749	29	09	710	655	83	24	00	00	02	02	748	743	743	743	743	743	743	743	743	743	748	745	745	745	745	744	744	744	744	746	748	748	748	748	744	700	679	668	661	656					
8	1100	2435	7734	749	29	09	710	655	83	24	00	00	02	02	748	748	748	748	748	748	745	745	745	745	745	745	745	745	745	745	745	745	745	745	746	747	747	747	745	700	681	669	661	658					
8	1115	2435	7734	749	29	09	710	655	83	24	00	00	02	02	731	731	731	731	731	731	731	731	731	731	731	731	731	730	730	730	729	729	730	731	732	732	733	733	732	680	667	653	649	642					
8	1130	2435	7734	747	29	09	710	655	83	24	00	00	02	02	746	746	747	747	747	748	747	745	746	746	747	747	746	746	746	746	744	744	746	748	748	750	751	751	748	694	682	670	663	658					
8	1145	2435	7734	747	29	09	710	655	83	24	00	00	02	02	746	746	748	747	747	747	746	746	746	746	746	746	746	746	746	745	744	744	745	746	748	749	750	750	747	694	680	669	661	657					
8	1200	2435	7734	744	29	08	691	639	83	24	00	00	02	02	746	746	746	746	746	746	747	747	747	747	747	746	745	745	745	743	743	743	748	748	748	748	749	749	749	683	679	669	661	658	651				
8	1215	2435	7734	746	29	08	691	939	83	24	00	00	02	02	745	745	745	745	745	746	747	747	747	747	747	747	747	747	747	746	745	745	745	750	750	750	750	750	750	750	694	680	668	662	658				
8	1230	2435	7734	745	29	08	691	639	83	24	00	00	02	02	747	747	746	747	747	747	747	747	747	747	747	746	746	746	746	745	744	746	748	748	748	750	751	750	750	700	681	668	661	656	651				
8	1245	2435	7734	745	29	08	691	639	83	24	00	00	02	02	747	747	747	747	747	747	747	747	747	747	747	747	747	747	746	746	746	746	745	750	750	750	751	751	750	750	704	679	669	660	656				
8	1300	2435	7734	745	29	10	698	640	82	23	00	00	03	02	746	747	748	748	748	748	748	748	748	748	748	748	747	747	747	746	745	746	747	748	748	749	750	749	749	712	682	669	664	656	652				
8	1315	2435	7734	745	29	10	698	640	82	23	00	00	03	02	745	744	744	744	744	744	744	744	744	744	743	743	743	743	743	742	742	742	746	747	747	748	749	747	749	711	682	668	665	656	651				
8	1330	2435	7734	747	29	10	698	640	82	23	00	00	03	02	748	748	747	747	747	746	746	745	745	745	745	745	745	745	744	743	744	747	748	748	748	748	749	748	747	715	684	670	664	658					
8	1345	2435	7734	747	29	10	698	640	82	23	00	00	03	02	745	745	745	745	745	744	744	744	744	744	744	744	744	744	744	743	743	744	746	747	747	748	749	749	748	747	720	685	671	668	658	655			

BATHYTHERMOGRAPH DATA
TONGUE OF THE OCEAN
MARCH 1960

DAY	TIME GMT HOUR	TIME GMT MINUTES	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (DEGREES)	WIND SPEED (KNOTS)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS AMOUNT	CLOUDS TYPE	CLOUDS BASE	CLOUDS HEIGHT	SEA HEIGHT (FEET)	SEA PERIOD (SECONDS)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
8	1400		2435	7734	746	31	11	699	638	82	23	00	00	03	02	745	745	745	745	746	746	746	746	746	746	746	745	745	744	743	743	745	746	747	747	748	748	749	747	748	725	687	670	664	659	
8	1415		2435	7734	748	31	11	699	638	82	23	00	00	03	02	745	745	745	745	745	745	745	745	745	745	745	745	745	744	745	747	747	747	747	747	750	750	748	748	731	683	669	663	657		
8	1430		2435	7734	748	31	11	699	638	82	23	00	00	03	02	746	746	746	746	746	746	746	746	746	746	746	745	745	744	744	746	747	747	747	747	748	749	749	748	749	728	687	670	664	660	654
8	1445		2435	7734	749	32	10	706	636	84	25	00	00	03	02	746	746	746	746	746	746	746	746	746	746	746	745	745	745	745	746	747	747	747	747	749	750	750	750	749	730	687	671	665	660	653
8	1500		2435	7734	749	32	10	706	636	84	25	00	00	03	02	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	745	746	746	746	746	749	750	750	750	749	730	686	669	663	658	653
8	1515		2435	7734	749	32	10	706	636	84	25	00	00	03	02	747	747	747	747	747	747	747	747	747	747	747	747	747	745	745	747	748	748	748	747	749	751	751	750	748	729	687	669	664	659	653
8	1530		2435	7734	749	32	10	706	636	84	25	00	00	03	02	747	746	745	745	745	745	745	745	745	745	746	745	745	747	748	748	748	748	748	749	751	751	749	748	725	687	671	664	659		
8	1545		2435	7734	749	34	10	708	641	85	26	00	00	03	02	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	747	747	747	747	747	749	750	750	750	749	727	687	672	663	658	
8	1600		2435	7734	749	34	10	708	641	85	26	00	00	03	02	748	747	747	747	747	747	747	747	747	747	747	747	747	747	747	748	748	748	748	747	747	748	750	750	750	749	730	688	672	663	658	653
8	1615		2435	7734	750	34	10	708	641	85	26	00	00	03	02	748	747	747	747	747	747	747	747	747	747	747	746	745	744	747	747	747	747	747	747	748	749	750	750	748	722	688	671	664	659	656
8	1630		2435	7734	750	34	10	708	641	85	26	00	00	03	02	748	747	746	745	745	745	745	745	745	745	745	745	744	747	748	748	748	747	747	748	748	750	750	750	748	726	687	671	663	659	655
8	1645		2435	7734	750	05	13	711	652	87	28	00	00	04	03	746	746	745	745	745	745	745	745	745	745	745	745	745	744	746	747	747	748	748	748	748	749	749	750	750	748	720	687	672	665	660	
8	1700		2435	7734	748	05	13	711	652	87	28	00	00	04	03	746	746	746	746	746	746	746	746	746	746	746	746	746	746	747	748	748	748	748	749	749	750	750	750	751	749	720	687	674	666	660	
8	1715		2435	7734	748	05	13	711	652	87	28	00	00	04	03	747	746	746	746	746	746	746	746	746	746	746	746	745	746	747	747	747	747	747	747	750	750	750	750	750	720	690	674	669	660	
8	1730		2435	7734	749	05	13	711	652	87	28	00	00	04	03	750	750	750	750	750	750	750	750	750	750	750	750	749	749	750	750	750	750	751	751	752	753	753	753	752	725	698	680	670	663	
8	1745		2435	7734	749	04	12	695	650	37	23	65	00	03	02	750	750	750	750	749	749	749	749	749	749	749	749	749	749	752	752	752	752	753	753	753	753	755	754	753	723	700	683	671	664	
8	1800		2435	7734	750	04	12	695	650	37	23	65	00	03	02	750	750	751	751	750	750	750	750	750	750	750	749	750	751	751	750	750	752	752	752	753	754	754	754	722	699	682	668	663	658	
8	1815		2435	7734	750	04	12	695	650	37	23	65	00	03	02	750	749	749	749	749	748	748	748	748	748	748	748	747	747	750	750	750	750	750	750	753	753	753	754	753	733	700	682	669	663	659
8	1830		2435	7734	750	04	12	695	650	37	23	65	00	03	02	751	751	751	751	750	749	749	749	749	749	749	749	748	748	750	750	750	751	751	751	752	753	754	754	754	726	699	680	669		
8	1845		2435	7734	749	05	12	692	642	22	23	00	00	03	02	751	750	750	750	750	750	749	749	749	749	749	749	749	748	750	750	750	750	750	751	752	753	754	754	754	730	700	678	668	664	
8	1900		2435	7734	750	05	12	692	642	22	23	00	00	03	02	750	750	750	749	748	748	748	748	748	748	747	747	747	747	749	749	749	748	748	749	750	750	752	752	753	753	730	700	678	668	662	
8	1915		2435	7734	750	05	12	692	642	22	23	00	00	03	02	750	750	750	749	749	748	749	749	749	749	748	748	748	749	750	750	750	750	751	752	753	754	753	753	732	696	677	669	664		
8	1930		2435	7734	750	05	12	692	642	22	23	00	00	03	02	747	744	744	743	743	743	743	743	743	743	743	743	744	744	744	744	744	744	745	747	747	747	748	748	720	688	669	662	658		
8	1945		2435	7734	750	05	12	692	642	22	23	00	00	03	02	750	745	744	744	743	743	742	742	742	742	742	742	743	744	744	744	745	745	746	746	747	747	748	749	749	720	689	668	661	658	
8	2000		2435	7734	750	04	11	699	631	22	22	00	00	03	02	748	744	743	742	742	742	742	743	743	743	742	742	743	744	744	744	744	744	745	746	747	747	748	749	749	719	689	669	662	658	
8	2015		2435	7734	750	04	11	699	631	22	22	00	00	03	02	748	747	745	743	743	742	742	742	742	742	742	742	742	744	744	744	744	744	745	745	746	747	747	748	749	749	719	688	669	662	658	
8	2030		2435	7734	750	04	11	699	631	22	22	00	00	03	02	748	744	743	742	742	742	742	742	742	742	742	742	742	742	742	743	744	745	745	746	747	748	748	748	718	683	665	660	666		
8	2045		2435	7734	750	04	11	699	631	22	22	00	00	03	02	747	746	745	744	743	742	742	742	742	742	742	742	743	743	743	743	743	743	745	746	747	747	747	748	748	720	684	669	661	658	
8	2100		2435	7734	750	05	11	700	629	22	22	00	00	03	02	747	746	745	743	742	742	742	742	742	742	742	742	743	743	743	743	743	744	745	747	748	749	749	749	749	718	682	669	661	657	
8	2115		2435	7734	750	05	11	700	629	22	22	00	00	03	02	748	747	746	744	743	743	742	742	743	742	742	743	745	746	747	747	747	747	747	748	749	749	750	750	749	721	683	669	661	657	651
8	2130		2435	7734	750	05	11	700	629	22	22	00	00	03	02	747	747	745	744	744	744	744	744	744	744	744	744	745	745	745	745	745	745	745	746	747	748	749	749	749	719	680	668	661	657	
8	2145		2435	7734	749	05	11	700	629	22	22	00	00	03	02	748	747	746	745	744	743	743	742	742	742	743	742	744	746	747	747	746	746	746	747	748	749	749	749	748	720	681	667	661	656	651
8	2200		2435	7734	749	04	10	700	630	82	22	00	00	03	02	745	745	745	744	742	742	742	742	742	742	742	743	744	744	744	744	744	745	745	747	748	749	749	749	748	720	680	664	661	654	
8	2215		2435	7734	749	04	10	700	630	82	22	00	00	03	02	742	742	742	742	742	742	741	741	742	742	742	742	743	743	743	743	743	744	745	746	745	748	748	744	716	675	662	660	653	651	
8	2230		2435	7734	748	04	10	700	630	82	22	00	00	03	02	743	743	743	742	742	742	742	743	743	742	742	742	743	743	743	743	743	743	745	747	747	748	748	743	716	675	662	659	650		
8	2245		2435	7734	749	04	10	700	630	82	22	00	00	03	02	744	744	743	743	743	742	742	742	742	742	742	743	743	744	744	744	744	745	747	748	749	749	749	743	715	675	663	660	654		
8	2300		2435	7734	745	06	10	704	630	82	22	00	00	03	02	745	745	744	744	744	744	743	743	742	742	742	743	744	744	745	745	744	744	745	746	747	748	748	747	745	719	676	666	662	659	
8	2315		2435	7734	746	06	10	704	630	82	22	00	00	03	02	746	744	744	743	743	743	743	742	742	742	743	743	744	745	745	745	745	745	745	746	746	746	747	747	745	716	671	671	659	656	
8	2330		2435	7734	748	06	10	704	630	82	22	00	00	03	02	748	744	744	744	744	744	744	744	744	744	744	744	744	745	745	745	744	744	744	745	747	747	748	748	749	749	720	675	664	661	659	654
8	2345		2435	7734	746	05	13	703	630	82	22	00	00	03	02	746	744	744	744	744	744	744	744	744	744	744	744	745	745	745	745	745	745	746	746	748	748	748	749	748	746	717	673	666	662	658	

DAY	TIME GMT	POSITION LATITUDE	POSITION LONGITUDE	SURF WATER TEMP	WIND DIRECTION (10's)	WIND SPEED	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS TYPE	CLOUDS AMOUNT	CLOUDS HEIGHT	SEA HEIGHT	SEA PERIOD	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
	HOUR	MINUTES	DEGREES	MINUTES	DEGREES	MINUTES	TENTHS	TENTHS																																				
9	0000	2435	7734	746	05	13	703	630	82	22	00	00	03	02	746	743	743	743	743	743	743	743	743	743	743	743	743	744	744	744	745	745	746	747	748	748	748	747	746	716	672	663	661	658	
9	0015	2435	7734	746	05	13	703	630	82	22	00	00	03	02	746	745	745	745	745	745	745	745	745	745	745	745	746	746	746	746	746	746	746	747	748	748	749	749	748	747	721	675	666	663	659	
9	0030	2435	7734	746	05	13	703	630	82	22	00	00	03	02	745	745	745	745	745	745	744	744	744	743	744	745	746	746	746	746	746	747	748	748	748	749	749	749	749	720	675	668	663	659	
9	0045	2435	7734	746	06	10	702	632	85	26	00	00	03	02	745	745	745	745	745	745	745	745	745	744	745	746	746	746	746	746	746	746	747	748	750	750	750	749	749	730	678	668	663	657	
9	0100	2435	7734	746	06	10	702	632	85	26	00	00	03	02	745	745	745	745	745	745	745	745	745	745	745	747	747	747	747	747	747	748	748	749	749	749	749	749	749	736	679	668	665	659	
9	0115	2435	7734	747	06	10	702	632	85	26	00	00	03	02	745	745	745	745	745	745	745	745	745	744	745	746	746	746	746	746	746	747	748	750	750	750	749	749	749	736	679	668	664	657	
9	0130	2435	7734	747	06	10	702	632	85	26	00	00	03	02	745	745	745	745	745	745	745	745	745	745	745	745	746	746	746	746	746	746	747	748	749	750	750	750	750	739	681	668	664	657	
9	0145	2435	7734	747	06	15	699	632	82	23	00	00	02	02	745	745	745	745	745	745	745	745	746	746	746	747	747	747	747	747	747	747	747	748	750	751	750	749	749	740	682	668	664	658	
9	0200	2435	7734	746	06	15	699	632	82	23	00	00	02	02	745	744	745	745	744	744	744	744	744	744	744	745	746	746	745	745	745	745	746	748	749	750	750	749	749	745	680	668	664	657	
9	0215	2435	7734	747	06	15	699	632	82	23	00	00	02	02	745	744	744	744	744	744	744	744	744	744	744	745	745	745	745	745	745	745	746	747	749	751	750	750	749	740	680	668	664	658	655
9	0230	2435	7734	746	06	15	699	632	82	23	00	00	02	02	744	744	744	744	744	744	744	744	744	744	744	744	745	745	745	745	745	745	745	746	747	749	749	749	749	739	680	668	664	658	
9	0245	2435	7734	747	06	13	700	642	82	23	00	00	02	02	745	745	745	745	745	745	745	745	745	745	745	745	746	746	746	746	746	746	746	747	750	750	750	749	747	685	670	664	657		
9	0300	2435	7734	746	06	13	700	642	82	23	00	00	02	02	744	744	744	744	744	744	744	744	744	744	744	745	746	745	745	745	745	745	747	748	749	750	750	750	750	745	685	668	664	658	
9	0315	2435	7734	746	06	13	700	642	82	23	00	00	02	02	742	742	742	742	742	742	742	742	742	742	741	742	742	742	742	742	742	742	745	747	746	747	747	747	746	687	667	662	656	653	
9	0330	2435	7734	747	06	13	700	642	82	23	00	00	02	02	743	743	743	43	743	743	743	743	743	743	743	744	744	744	744	744	745	746	746	746	747	748	747	748	748	748	690	670	664	659	655
9	0345	2435	7734	747	06	15	700	638	85	26	00	00	02	02	743	743	743	743	743	743	743	744	744	744	743	743	745	746	746	746	746	746	746	747	748	748	747	748	748	747	688	673	665	660	
9	0400	2435	7734	747	06	15	700	638	85	26	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	745	745	745	745	745	745	745	746	748	748	748	747	747	746	748	688	673	663	660	654
9	0415	2435	7734	747	06	15	700	638	85	26	00	00	02	02	743	743	743	743	743	743	743	743	743	742	742	744	744	744	744	744	744	744	745	747	748	747	747	745	745	747	698	674	665	650	
9	0430	2435	7734	747	06	15	700	638	85	26	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	744	744	743	743	743	745	745	746	748	748	748	748	748	748	745	690	673	663	659	
9	0445	2435	7734	747	06	17	700	658	86	28	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	745	745	745	745	745	745	745	746	747	746	747	746	745	745	746	688	674	664	659	
9	0500	2435	7734	747	06	17	700	658	86	28	00	00	02	02	743	743	743	743	743	743	743	743	743	743	743	743	744	745	745	745	745	745	745	747	747	747	747	747	745	747	694	673	663	659	
9	0515	2435	7734	745	06	17	700	658	86	28	00	00	02	02	745	744	744	744	744	744	744	744	744	744	744	745	745	745	745	745	745	746	746	747	748	748	747	747	747	745	700	673	662	659	
9	0530	2435	7734	745	06	17	700	658	86	28	00	00	02	02	744	744	7	4	744	744	744	743	743	743	743	743	742	743	743	743	743	743	745	745	747	748	748	747	747	747	700	674	663	659	652
9	0545	2435	7734	745	07	18	695	631	84	25	00	00	03	02	744	744	744	744	744	744	743	743	743	743	743	743	743	743	743	743	743	743	743	747	747	747	746	746	746	746	700	675	663	659	652
9	0600	2435	7734	744	07	18	695	631	84	25	00	00	03	02	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	748	747	745	745	745	747	698	673	663	658	651
9	0615	2435	7734	744	07	18	695	631	84	25	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	745	745	745	745	745	745	745	745	745	748	748	748	746	746	746	747	697	675	665	659	653
9	0630	2435	7734	744	07	18	695	631	84	25	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	745	745	745	745	745	745	745	746	748	748	748	748	748	747	747	697	675	665	660	654
9	0645	2435	7734	744	07	17	692	632	34	22	62	00	03	02	743	743	743	743	743	743	743	743	743	743	743	745	745	745	745	745	745	746	747	748	748	748	748	748	748	747	692	672	662	659	
9	0700	2435	7734	744	07	17	692	632	34	22	62	00	03	02	744	744	744	744	744	743	743	743	743	743	743	743	745	745	745	746	746	746	746	747	747	747	747	747	747	747	743	690	671	662	658	
9	0715	2435	7734	744	07	17	692	632	34	22	62	00	03	02	743	743	743	743	743	743	743	743	743	743	743	745	745	745	745	745	745	745	748	748	747	747	747	747	747	743	690	670	660	658	
9	0730	2435	7734	745	07	17	692	632	34	22	62	00	03	02	743	743	743	743	743	743	743	743	743	743	743	744	744	744	744	744	745	745	745	746	746	746	745	745	744	744	690	670	662	658	652
9	0745	2435	7734	745	07	15	690	632	82	22	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	743	744	744	744	744	744	744	744	744	748	748	748	747	747	747	747	690	671	663	659	653
9	0800	2435	7734	745	07	15	690	632	82	22	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	747	747	745	745	745	745	743	690	670	663	658		
9	0815	2435	7734	745	07	15	690	632	82	22	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	743	743	746	746	746	746	746	747	747	747	746	746	746	744	690	670	662	658	653	
9	0830	2435	7734	745	07	15	690	632	82	22	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	744	744	744	744	744	744	744	747	747	747	747	747	747	747	691	670	663	658	653	
9	0845	2435	7734	740	07	15	692	634	00	00	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	743	744	744	744	744	744	744	744	747	747	747	746	746	746	740	694	671	663	658	
9	0900	2435	7734	743	07	15	692	634	00	00	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	744	744	744	744	744	744	744	744	745	745	745	744	744	744	739	691	670	661	657	
9	0915	2435	7734	742	07	15	692	634	00	00	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	744	744	744	744	744	744	744	744	746	747	747	746	745	744	733	690	670	661	655	
9	0930	2435	7734	743	07	15	692	634	00	00	00	00	03	02	743	743	743	743	743	743	743	743	743	743	743	743	743	743	746	746	745	745	745	747	747	747	746	744	743	735	689	668	661	655	
9	0945	2435	7734	743	07	18	690	630	81	21	00	00	04	02	742	742	742	742	742	742	742	742	742	742	742	744	745	746	747	747	747	746	746	748	750	750	750	748	747	735	682	667	661	656	

BATHYTHERMOGRAPH DATA
TONGUE OF THE OCEAN
MARCH 1960

DAY	TIME (GMT) HOUR	TIME (GMT) MINUTE	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIR (TRUE)	WIND SPEED (knots)	AIR TEMPERATURE DRY BULB (D.T°F)	AIR TEMPERATURE WET BULB (D.T°F)	CLOUDS LOW TYPE	CLOUDS LOW AMOUNT	CLOUDS MIDDLE TYPE	CLOUDS MIDDLE AMOUNT	CLOUDS HIGH TYPE	CLOUDS HIGH AMOUNT	SEA STATE (Hunt)	SEA PERIOD (seconds)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
9	1000		2435	7734	743	07	18	690	630	81	21	00	00	04	02	743	743	743	743	743	743	743	744	744	746	746	747	747	748	748	746	746	748	748	748	748	747	747	746	725	685	668	662	659					
9	1015		2435	7734	743	07	18	690	630	81	21	00	00	04	02	743	743	743	743	743	743	743	743	744	744	745	745	745	745	745	746	745	745	746	747	748	748	748	748	746	725	685	668	662	658				
9	1030		2435	7734	743	07	18	690	630	81	21	00	00	04	02	743	743	743	743	743	743	743	743	743	743	745	745	745	745	745	746	745	745	746	746	746	746	746	746	744	725	680	667	662	658				
9	1045		2435	7734	743	06	18	690	626	84	25	00	00	03	02	743	743	743	743	743	743	743	743	743	744	745	745	745	745	745	745	744	744	744	745	745	747	747	747	746	716	679	665	660	656				
9	1100		2435	7734	744	06	18	690	626	84	25	00	00	03	02	743	743	743	743	743	743	743	743	744	745	746	746	747	747	747	747	747	747	747	747	747	747	747	747	745	714	678	667	661	657				
9	1115		2435	7734	745	06	18	690	626	84	25	00	00	03	02	743	743	743	743	743	743	743	743	743	744	745	745	746	746	747	747	745	744	745	747	747	747	747	747	744	713	679	666	661	656				
9	1130		2435	7734	744	06	18	690	626	84	25	00	00	03	02	742	742	742	742	742	742	742	742	742	743	744	745	745	746	747	747	745	744	744	747	747	747	747	747	744	712	678	664	659	655				
9	1145		2435	7734	744	07	16	693	638	85	26	00	00	04	03	742	742	742	742	742	742	742	742	742	743	744	745	745	746	746	747	747	747	745	745	747	747	747	747	744	710	674	664	661	657				
9	1200		2435	7734	744	07	16	693	638	85	26	00	00	04	03	742	742	742	742	742	742	742	745	742	742	743	743	745	746	746	747	747	747	746	747	747	747	747	747	743	711	676	665	662	659				
9	1215		2435	7734	744	07	16	693	638	85	26	00	00	04	03	742	742	742	742	742	742	743	743	743	742	742	743	745	746	746	747	746	745	746	746	746	747	747	745	742	719	678	665	661	659				
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9	1245		2435	7734	744	07	16	693	638	85	26	00	00	04	03	742	742	742	742	742	742	742	742	743	743	744	745	745	746	747	747	747	747	747	747	747	747	747	747	746	724	680	664	660	658				
9	1300		2435	7734	745	07	17	696	633	85	26	00	00	04	03	742	742	742	742	742	742	742	742	743	743	743	744	745	745	746	745	745	746	747	747	747	747	747	747	746	738	686	665	661	659				
9	1315		2435	7734	745	07	17	696	633	85	26	00	00	04	03	742	742	742	742	742	742	741	741	742	742	742	742	742	742	742	742	742	743	743	745	744	744	744	744	743	735	690	663	660	654				
9	1330		2435	7734	745	07	17	696	633	85	26	00	00	04	03	742	742	742	742	742	742	742	742	742	743	743	743	743	743	743	743	743	743	742	743	744	744	744	745	745	743	741	697	668	661	658	652		
9	1345		2435	7734	745	07	17	696	633	85	26	00	00	04	03	740	740	740	740	740	740	740	740	740	740	740	741	741	741	742	742	741	741	741	742	742	742	742	742	741	738	692	662	659	652				
9	1400		2435	7734	745	07	15	701	640	85	26	00	00	04	03	740	740	740	740	740	740	740	740	740	740	740	741	741	741	742	742	742	742	741	742	742	742	742	742	741	739	700	664	659	654				
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9	1445		2435	7734	745	07	15	701	640	85	26	00	00	04	03	740	740	740	740	740	740	740	740	740	741	741	741	742	742	742	742	742	742	742	742	743	743	743	743	744	743	742	708	675	661	658			
9	1500		2435	7734	745	07	14	710	640	83	24	00	00	04	03	740	740	740	750	740	740	740	740	740	741	741	741	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	710	673	661	659			
9	1515		2435	7734	745	07	14	710	640	83	24	00	00	04	03	745	741	741	741	741	741	741	741	741	741	742	742	742	743	743	743	743	743	743	743	743	743	743	743	744	744	712	677	662	657				
9	1530		2435	7734	745	07	14	710	640	83	24	00	00	04	03	745	740	740	740	740	740	740	740	740	740	741	742	742	743	743	743	743	743	743	743	744	744	744	744	743	743	719	671	662	657				
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9	1600		2435	7734	745	07	15	710	640	83	24	00	00	04	03	745	741	741	741	741	741	741	741	742	742	742	742	742	743	743	743	743	743	743	744	744	744	745	745	744	743	731	688	667	659				
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9	1645		2435	7734	744	07	12	714	651	83	24	00	00	04	03	744	743	743	743	743	743	743	743	743	743	743	744	744	744	744	744	744	744	744	744	744	744	745	745	745	745	742	702	669	660				
9	1700		2435	7734	747	07	12	714	651	83	24	00	00	04	03	747	741	741	739	739	739	740	740	740	740	741	741	742	742	743	743	743	744	744	744	744	744	744	744	743	743	744	744	739	688	670	662		
9	1715		2435	7734	745	07	12	714	651	83	24	00	00	04	03	743	743	743	743	743	743	743	743	743	744	745	745	745	746	747	747	748	748	748	748	748	748	748	749	749	748	742	700	673	665				
9	1730		2435	7734	746	07	12	714	651	83	24	00	00	04	03	743	743	743	743	743	743	742	742	742	743	744	744	745	745	745	746	746	747	747	747	748	748	748	748	748	748	741	700	671	664				
9	1745		2435	7734	746	10	13	721	651	87	28	00	00	04	03	746	746	746	745	745	745	745	745	745	745	745	746	746	747	747	747	748	749	749	749	749	749	749	749	749	748	744	704	677	666				
9	1800		2435	7734	746	10	13	721	651	87	28	00	00	04	03	741	741	741	741	741	741	741	740	741	741	742	742	742	743	743	743	744	744	744	744	745	745	745	746	745	745	739	695	671	662				
9	1815		2435	7734	745	10	13	721	651	87	28	00	00	04	03	743	743	743	743	743	743	742	743	743	743	743	743	743	743	744	744	744	745	745	745	745	745	745	746	746	739	709	674	663					
9	1830		2435	7734	745	10	13	721	651	87	28	00	00	04	03	743	743	743	742	742	742	742	742	743	743	743	743	743	743	743	744	745	745	745	745	745	745	746	746	746	736	701	673	663					
9	1845		2435	7734	745	10	13	721	651	87	28	00	00	04	03	744	743	743	742	742	742	743	743	743	743	743	743	743	743	744	744	744	745	746	746	746	746	747	747	746	735	699	673	665					
9	1900		2435	7734	745	10	11	742	662	86	27	00	00	04	03	747	746	746	746	746	746	744	745	745	746	746	747	747	746	747	747	747	748	748	748	748	749	750	750	750	749	739	698	675	665				
9	1915		2435	7734	746	10	11	742	662	86	27	00	00	04	03	748	747	746	745	744	744	744	744	744	745	745	745	745	745	745	745	746	746	746	748	748	748	748	748	748	749	738	699	674	666	659			
9	1930		2435	7734	746	10	11	742	662	86	27	00	00	04	03	747	748	747	745	744	744	744	745	746	746	745	746	746	746	747	747	748	748	748	748	748	748	748	748	748	748	735	700	674	666				
9	1945		2435	7734	746	10	11	742	662	86	27	00	00	04	03	745	745	745	744	743	743	743	743	744	744	744	744	744	744	745	745	745	746	747			748	748	748	748	748	725	690	671	664				

DAY	TIME GMT HOUR	TIME GMT MINUTES	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (10's)	WIND SPEED (knots)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS TYPE LOW	CLOUDS TYPE MIDDLE	CLOUDS TYPE HIGH	CLOUDS AMOUNT LOW	CLOUDS AMOUNT MIDDLE	CLOUDS AMOUNT HIGH	SEA HEIGHT (feet)	SEA PERIOD	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
9	2000		2435	7734	746	11	14	742	670	84	25	00	00					04	03	746	745	744	743	743	743	743	743	744	744	744	744	743	743	745	745	745	745	745	746	747	748	748	748	748	748	729	695	671	665			
9	2015		2435	7734	746	11	14	742	670	84	25	00	00					04	03	745	745	744	743	743	743	743	744	744	744	744	744	744	744	744	745	745	745	745	746	746	747	748	748	748	748	735	690	672	666			
9	2030		2435	7734	746	11	14	742	670	84	25	00	00					04	03	748	747	748	745	744	744	745	745	746	746	745	745	745	745	746	748	748	748	748	748	748	749	749	749	749	749	725	695	674	665			
9	2045		2435	7734	747	11	14	742	670	84	25	00	00					03	03	748	747	746	745	745	745	745	745	746	745	745	745	745	746	747	747	748	748	749	749	749	749	749	749	749	732	690	674	667	661		
9	2100		2435	7734	745	12	14	768	673	84	25	00	00					03	03	747	747	747	747	746	747	747	748	747	745	745	745	745	746	747	747	747	747	748	748	748	748	748	750	750	750	734	698	663	667	660		
9	2115		2435	7734	746	12	14	768	673	84	25	00	00					03	03	746	746	745	744	744	745	745	745	744	744	744	744	745	747	748	748	748	748	748	749	749	749	749	750	750	750	734	690	672	666			
9	2145		2435	7734	746	12	10	763	675	83	24	00	00					02	02	748	747	745	744	744	743	743	743	744	743	743	743	745	747	748	748	748	748	748	748	748	747	747	748	748	724	672	661	665			
9	2200		2435	7734	746	12	10	765	675	83	24	00	00					02	02	748	748	748	748	748	748	748	748	748	748	748	748	748	749	749	749	749	750	750	750	750	750	750	750	749	728	687	673	666			
9	2215		2435	7734	746	12	10	765	675	83	24	00	00					02	02	748	748	748	748	748	748	748	748	748	748	748	748	748	749	749	749	749	749	749	749	750	750	750	750	750	732	684	672	658			
9	2230		2435	7734	746	12	10	765	675	83	24	00	00					02	02	747	747	747	746	746	746	746	746	746	746	746	746	747	748	748	748	748	748	748	748	748	749	749	749	749	749	734	700	672	666	660	658	
9	2245		2435	7734	746	12	10	758	680	83	24	00	00					02	02	743	743	743	743	742	740	740	740	740	740	740	740	740	742	743	744	744	744	744	744	745	745	745	746	746	745	725	685	669	662			
9	2300		2435	7734	746	12	10	758	680	83	24	00	00					02	02	745	745	745	745	746	746	746	746	746	746	746	746	746	746	747	748	748	749	749	749	749	749	749	749	749	749	730	687	672	656			
9	2315		2435	7734	746	12	10	758	680	83	24	00	00					02	02	744	745	746	745	744	744	744	744	744	744	744	744	744	746	747	748	749	749	749	749	749	749	749	749	749	749	726	685	671	657			
9	2330		2435	7734	747	12	10	758	680	83	24	00	00					02	02	746	746	746	746	746	746	746	746	746	746	746	746	746	747	747	748	749	749	749	749	750	750	750	750	750	749	727	690	671	657	661		
9	2345		2435	7734	746	11	11	739	680	83	24	00	00					03	02	745	745	745	745	745	745	745	745	745	745	746	746	747	747	748	749	749	749	749	749	749	749	750	749	725	685	670	665				
10	0000		2435	7734	745	11	11	739	680	83	24	00	00					03	02	745	745	745	745	744	744	744	744	744	744	744	746	747	747	748	748	749	749	749	749	750	750	750	750	750	725	688	669	663				
10	0015		2435	7734	746	11	11	739	680	83	24	00	00					03	02	745	745	745	745	745	745	745	745	745	744	745	746	747	747	748	749	749	749	749	750	770	750	750	749	749	730	695	670	663	659			
10	0030		2435	7734	746	11	11	739	680	83	24	00	00					03	02	745	745	745	745	745	745	745	745	745	745	745	746	747	747	748	749	749	749	749	749	749	749	749	749	749	729	695	670	664				
10	0045		2435	7734	745	14	12	731	672	83	24	00	00					03	02	745	745	745	745	743	743	743	743	744	744	744	744	744	746	746	747	748	748	748	748	749	749	749	749	749	749	732	698	670	663	659	652	
10	0100		2435	7734	746	14	12	731	672	83	24	00	00					03	02	744	744	744	744	744	744	743	744	744	744	744	744	744	744	744	744	746	748	749	749	749	749	749	750	750	750	750	735	705	671	665				
10	0115		2435	7734	745	14	12	731	672	83	24	00	00					03	02	745	745	745	745	744	743	743	743	743	743	743	744	745	746	746	747	748	748	748	748	748	748	749	749	749	749	737	744	670	664				
10	0130		2435	7734	745	14	12	731	672	83	24	00	00					03	02	743	743	743	743	743	743	743	743	743	743	743	743	744	744	745	747	748	748	748	748	748	748	748	748	748	734	704	669	662				
10	0145		2435	7734	745	14	13	730	679	83	24	00	00					03	02	744	744	744	744	744	743	743	743	743	743	743	743	744	745	745	746	747	748	748	748	748	748	748	743	743	743	743	748	735	703	670	768			
10	0200		2435	7734	745	14	13	730	679	83	24	00	00					03	02	742	742	742	742	742	742	742	742	742	742	742	743	744	745	746	747	748	748	748	748	748	748	748	748	748	738	708	672	666	660			
10	0215		2435	7734	745	14	13	730	679	83	24	00	00					03	02	743	743	743	743	743	743	743	743	743	743	743	743	743	743	744	745	746	747	747	747	747	747	747	747	747	740	704	670	661				
10	0230		2435	7734	745	14	13	730	679	83	24	00	00					03	02	743	743	743	743	743	743	743	743	743	743	743	743	744	744	744	744	745	745	745	746	746	747	747	747	747	747	744	704	670	662	660		
10	0245		2435	7734	745	12	12	729	681	85	26	00	00					03	02	743	743	743	743	743	743	743	743	743	743	743	743	743	743	744	744	745	746	747	747	747	747	747	747	747	742	706	672	664				
10	0300		2435	7734	745	12	12	729	681	85	26	00	00					03	02	743	743	743	743	743	743	743	743	743	743	743	743	743	743	744	744	745	746	746	746	746	746	746	747	747	747	744	704	672	665				
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10	0330		2435	7734	745	12	12	729	681	85	26	00	00					03	02	743	743	743	743	743	743	743	743	743	743	743	743	743	743	744	745	746	746	746	746	746	746	746	746	746	745	708	672	664				
10	0345		2435	7734	745	14	10	725	670	82	23	00	00					03	02	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	744	745	747	747	747	747	747	748	748	748	748	744	709	674	666				
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10	0415		2435	7734	745	14	10	725	670	82	23	00	00					03	02	742	742	742	742	742	742	742	742	742	742	742	742	742	742	743	744	745	746	747	747	747	747	747	747	747	746	710	678	667	660	653		
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10	0445		2435	7734	745	14	10	725	670	82	23	00	00					02	02	740	740	740	740	740	740	740	740	740	740	742	742	742	742	742	742	743	743	745	746	746	747	747	747	747	748	748	710	676	668				
10	0500		2435	7734	745	14	10	723	673	82	23	00	00					02	02	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	743	744	745	745	746	746	747	747	748	747	710	673	667				
10	0515		2435	7734	745	14	10	723	673	82	23	00	00					02	02	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	743	746	746	746	746	746	746	746	747	747	710	676	667				
10	0530		2435	7734	744	14	10	723	673	82	23	00	00					02	02	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	744	745	746	746	747	747	747	747	747	715	681	668					
10	0545		2435	7734	745	14	10	723	673	82	23	00	00					03	02	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	743	746	747	747	748	747	747	747	742	711	677	667					
10	0600		2435	7734	743	14	10	723	678	82	23	00	00					03	02	748	748	748	748	748	748	748	748	747	747	748	748	748	748	748	748	749	749	750	750	750	750	750	750	750	730	700	670					

BATHYTHERMOGRAPH DATA
TONGUE OF THE OCEAN
MARCH 1960

Day	Time GMT (Hour Minute)	Latitude (Degrees Minutes)	Longitude (Degrees Minutes)	Surf Water Temp	Wind Direction (00-36)	Wind Speed (knots)	Air Temp Dry Bulb (0.1°F)	Air Temp Wet Bulb (0.1°F)	Clouds				Sea Height (feet)	Sea Period (seconds)	000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
10	0615	2435	7734	744	14	10	723	678	82	23	00	00	03	02	745	745	745	745	745	745	745	745	745	746	747	747	747	747	747	747	747	748	749	750	750	750	750	750	750	750	749	727	698	670		
10	0630	2435	7734	744	14	10	723	678	82	23	00	00	03	02	739	739	739	739	739	739	740	740	740	740	740	740	740	740	740	741	741	741	742	742	742	742	742	742	742	742	739	709	690	663		
10	0645	2435	7734	744	14	10	723	678	82	23	00	00	03	02	740	740	740	740	740	740	740	740	740	740	741	742	742	742	742	742	742	742	743	744	745	745	745	745	745	745	740	712	685	666		
10	0700	2435	7734	744	14	09	720	674	82	23	00	00	03	02	740	740	740	740	740	740	741	741	741	742	742	742	742	742	742	742	742	742	742	744	745	745	745	745	745	745	740	719	680	665		
10	0715	2435	7734	744	14	09	720	674	82	23	00	00	03	02	740	740	740	740	740	740	742	742	742	742	742	742	742	742	742	742	742	742	742	743	743	745	745	745	745	745	738	711	686	663		
10	0730	2435	7734	744	14	09	720	674	82	23	00	00	03	02	743	740	740	740	740	740	741	741	741	741	741	741	742	742	742	743	743	744	744	745	745	745	745	745	745	745	736	715	675	666		
10	0745	2435	7734	743	14	10	720	676	82	22	00	00	02	02	743	741	741	741	741	741	741	741	741	741	741	742	742	742	743	743	743	744	744	744	744	745	745	745	745	745	734	710	687	662		
10	0800	2435	7734	744	14	10	720	676	82	22	00	00	02	02	744	742	742	742	742	742	742	742	742	743	743	743	743	744	744	745	745	745	745	745	745	745	746	746	746	747	736	718	685	669		
10	0815	2435	7734	744	14	10	720	676	82	22	00	00	02	02	744	741	741	741	742	742	742	742	743	743	743	743	744	744	744	745	745	745	745	745	745	746	746	747	747	748	737	719	676	667		
10	0830	2435	7734	744	14	10	720	676	82	22	00	00	02	02	744	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	746	747	747	747	747	748	748	749	738	720	689	668	660	
10	0845	2435	7734	744	14	11	719	675	82	22	00	00	02	02	744	742	742	742	742	742	742	743	743	743	743	743	744	744	744	745	745	745	745	747	747	747	747	748	748	749	736	719	687	667		
10	0900	2435	7734	744	14	11	719	675	82	22	00	00	02	02	744	742	742	742	742	742	742	742	745	746	747	747	747	747	747	747	747	747	747	747	747	745	745	745	745	745	740	709	676	668		
10	0915	2435	7734	744	14	11	719	675	82	22	00	00	02	02	744	743	743	743	743	743	744	747	747	747	747	747	747	747	747	747	747	747	748	748	748	748	748	749	749	749	742	715	680	669		
10	0930	2435	7734	743	14	11	719	675	82	22	00	00	02	02	743	743	743	743	743	743	744	745	747	747	747	747	747	747	747	747	747	748	748	748	748	748	748	748	748	748	730	710	675	669		
10	0945	2435	7734	743	14	10	713	673	82	22	00	00	02	02	743	743	743	743	743	743	743	744	744	744	744	744	745	745	746	747	747	747	747	747	747	747	747	747	747	747	729	700	670	666		
10	1000	2435	7734	743	14	10	713	673	82	22	00	00	02	02	743	743	743	743	743	743	744	745	745	745	745	745	746	746	746	746	746	747	747	747	747	747	746	747	747	747	725	700	675	667		
10	1015	2435	7734	744	14	10	713	673	82	22	00	00	02	02	740	740	740	740	740	740	740	740	740	740	740	741	742	742	742	742	743	743	743	743	743	743	743	743	743	743	723	694	671	663		
10	1030	2435	7734	744	14	10	713	673	82	22	00	00	02	02	747	747	747	747	748	748	748	748	748	748	748	748	749	749	750	750	750	750	750	750	750	750	751	751	750	750	729	700	676	669		
10	1045	2435	7734	743	14	10	712	672	82	22	00	00	02	02	743	743	743	743	743	744	744	745	745	745	745	745	745	745	745	745	746	746	747	747	747	747	747	747	748	747	725	696	672	665		
10	1100	2435	7734	742	14	10	712	672	82	22	00	00	03	02	742	742	742	742	742	742	742	743	743	743	743	743	743	744	744	745	745	745	746	747	747	747	747	747	747	747	726	696	671	655		
10	1115	2435	7734	734	14	10	712	672	82	22	00	00	03	02	741	741	741	741	741	742	743	743	743	743	743	743	745	745	745	745	746	747	747	747	747	747	747	748	748	748	725	697	670	663		
10	1130	2435	7734	745	14	10	712	672	82	22	00	00	03	02	742	742	742	742	742	742	743	743	744	744	744	746	746	747	747	747	747	747	747	748	748	748	748	748	748	748	728	699	673	666		
10	1145	2435	7734	745	14	08	718	678	82	22	00	00	01	02	743	743	743	743	743	744	746	747	746	746	746	746	748	748	748	748	748	748	748	749	749	749	749	749	749	749	730	703	675	668		
10	1200	2435	7734	745	14	08	718	678	82	22	00	00	01	02	743	743	743	743	744	745	745	746	747	747	747	748	748	748	748	748	748	748	748	749	749	749	749	749	749	749	734	704	673	666	650	
10	1215	2435	7734	745	14	08	718	678	82	22	00	00	01	02	745	745	745	745	746	747	747	748	748	748	748	748	748	748	749	749	749	749	750	750	750	750	750	750	750	751	737	704	676	669	662	659
10	1230	2435	7734	745	14	08	718	678	82	22	00	00	01	02	745	745	746	745	745	746	747	748	748	748	748	748	748	748	748	748	748	749	749	749	750	750	750	750	749	749	732	702	675			
10	1245	2435	7734	744	15	08	741	688	81	21	00	00	01	02	743	743	743	743	744	745	745	746	747	748	748	748	748	748	748	748	748	748	748	749	749	749	749	749	749	749	737	710	674	667		
10	1300	2435	7734	744	15	08	741	688	81	21	00	00	01	02	742	742	742	742	742	742	743	744	744	744	744	744	745	746	747	747	747	747	747	748	748	748	748	748	748	748	739	710	671	665		
10	1315	2435	7734	744	15	08	741	688	81	21	00	00	01	02	742	742	742	742	742	743	743	744	744	744	744	744	744	745	745	746	746	747	747	748	748	748	748	748	748	748	730	700	672	665		
10	1330	2435	7734	744	15	08	741	688	81	21	00	00	01	02	742	742	742	742	742	743	744	745	745	745	745	745	746	747	747	747	747	747	748	748	748	748	748	748	748	748	728	705	683	669	650	
10	1345	2435	7734	745	15	04	761	701	81	21	00	00	01	02	743	742	742	742	743	743	744	745	745	745	745	746	746	746	747	747	747	747	747	748	748	748	748	749	749	749	732	708	688	670	663	658
10	1400	2435	7734	745	15	04	761	701	81	21	00	00	01	02	743	743	743	743	743	743	744	744	745	745	745	745	746	747	747	747	747	748	748	748	748	748	748	748	748	748	732	705	688	671		
10	1415	2435	7734	745	15	04	761	701	81	21	00	00	01	02	743	743	743	743	743	744	745	746	746	746	746	745	746	747	748	747	748	748	748	748	748	748	748	748	748	748	730	705	690	671		
10	1430	2435	7734	746	15	04	761	701	81	21	00	00	01	02	744	743	743	743	743	744	745	745	745	745	745	746	746	747	747	747	747	747	748	748	748	748	748	748	748	748	735	713	690	670	663	
10	1445	2435	7734	745	16	04	771	708	81	21	00	00	01	01	743	743	743	743	743	743	744	744	744	745	745	745	745	745	746	746	747	747	747	747	748	748	748	748	748	748	735	710	690	669		
10	1500	2435	7734	745	16	04	771	708	81	21	00	00	01	01	743	743	743	743	743	743	743	744	745	745	745	746	746	746	746	746	746	747	747	747	747	747	747	747	748	748	736	714	695	670		
10	1515	2435	7734	747	16	04	771	708	81	21	00	00	01	01	748	746	746	746	746	746	748	748	748	747	747	747	747	747	748	747	748	749	750	750	750	750	750	750	750	750	740	720	699	672		
10	1530	2435	7734	749	16	04	771	708	81	21	00	00	01	01	748	744	744	744	744	745	746	747	747	747	747	747	747	747	747	747	747	747	748	749	750	750	750	750	750	751	744	724	698	672	668	
10	1545	2435	7734	751	16	04	771	708	81	21	00	00	01	01	740	740	740	740	740	740	740	740	740	740	740	740	740	740	740	740	741	741	742	742	742	742	742	742	742	743	738	716	687	663		
10	1600	2435	7734	753	16	07	780	709	81	21	00	00	01	01	745	743	742	742	742	742	743	744	745	746	746	746	747	747	747	747	746	746	747	748	748	748	748	748	748	748	730	712	684	660		

DAY	TIME GMT	POSITION		SURF WATER TEMP	WIND		AIR TEMPERATURE		CLOUDS					SEA		TEMPERATURES AT DEPTH																												
		LATITUDE	LONGITUDE		DIRECTION (00-36)	SPEED (KNOTS)	DRY BULB (0 1/2°)	WET BULB (0 1/2°)	AMOUNT	TYPE LOW	TYPE MIDDLE	TYPE HIGH	HEIGHT BASE LOWEST	HEIGHT (FEET)	PERIOD (SECONDS)	000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
10	1615	2435	7734	755	16	07	780	709	81	21	00	00	01	01		742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	743	746	747	747	747	747	746	746	740	720	691	668			
10	1630	2435	7734	758	16	07	780	709	81	21	00	00	01	01		745	745	744	743	743	744	745	746	747	747	747	747	747	747	747	747	747	747	747	747	748	749	749	749	749	749	749	741	723	694	670		
10	1645	2435	7734	760	16	07	780	709	81	21	00	00	01	01		749	745	745	744	743	744	745	747	747	747	747	747	747	747	747	747	747	747	747	747	749	750	750	750	750	750	750	749	724	694	670	664	
10	1700	2435	7734	761	02	03	790	715	81	21	00	00	01	01		744	744	743	743	743	743	744	745	746	746	746	746	747	747	747	747	747	747	747	747	750	750	750	750	750	749	748	721	691	670	663		
10	1715	2435	7734	761	02	03	790	715	81	21	00	00	01	01		744	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	743	743	745	746	747	747	747	747	746	746	721	690	669			
10	1730	2435	7734	759	02	03	790	715	81	21	00	00	01	01		745	742	742	742	742	742	742	742	742	743	742	743	743	743	743	743	744	744	745	746	747	747	747	747	747	743	721	686	667			
10	1745	2435	7734	770	02	03	790	715	81	21	00	00	01	01		744	742	742	742	742	742	742	742	742	742	742	742	742	742	742	743	744	746	747	747	747	747	747	747	741	721	685	668			
10	1800	2435	7734	770	17	03	808	720	81	21	00	00	01	01		745	742	742	742	742	742	743	743	743	743	743	743	743	743	743	744	744	745	745	746	746	747	747	747	747	747	741	721	684	687			
10	1815	2435	7734	762	17	03	808	720	81	21	00	00	01	01		745	742	742	742	742	742	743	744	744	744	744	744	744	744	744	745	745	745	745	746	746	747	747	747	748	747	747	743	720	689	668	661		
10	1830	2435	7734	767	17	03	808	720	81	21	00	00	01	01		741	741	741	741	740	740	741	741	741	741	741	741	740	740	740	740	740	740	740	741	743	742	743	743	743	742	741	718	683	662			
10	1845	2435	7734	774	17	03	808	720	81	21	00	00	01	01		748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	749	750	750	751	751	751	752	752	753	753	742	719	685	672	667		
10	1900	2435	7734	774	17	05	765	686	81	21	00	00	01	01		747	746	746	746	746	746	749	749	749	749	749	749	749	749	749	749	750	750	750	751	751	751	751	751	751	751	753	742	714	682	671			
10	1915	2435	7734	773	17	05	765	686	81	21	00	00	01	01		746	746	745	745	746	747	748	749	749	749	749	749	749	749	749	749	749	750	750	751	751	751	751	751	751	751	752	741	715	683	671			
10	1930	2435	7734	772	17	05	765	686	81	21	00	00	01	01		746	746	746	745	746	746	747	747	748	748	748	748	748	748	748	748	748	750	750	751	751	751	751	751	751	751	752	742	714	682	671			
10	1945	2435	7734	770	18	06	783	701	81	21	00	00	01	01		752	752	752	752	752	752	753	753	753	754	754	754	754	754	754	755	755	756	757	757	758	758	758	758	758	758	743	710	682	679			
10	2000	2435	7734	771	18	06	783	701	81	21	00	00	01	01		750	749	749	749	749	749	750	750	751	752	752	752	753	753	753	753	753	754	754	756	755	755	755	755	755	755	740	700	676	668			
10	2015	2435	7734	775	18	06	783	701	81	21	00	00	01	01		749	745	744	744	744	744	744	744	744	744	744	744	745	745	745	745	745	745	745	745	745	751	751	751	751	751	751	745	729	675	670			
10	2030	2435	7734	770	18	06	783	701	81	21	00	00	01	01		746	743	744	744	744	744	744	744	744	744	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	744	725	675	668	665		
10	2045	2435	7734	762	18	06	773	688	81	21	00	00	01	01		745	743	743	743	743	743	743	743	743	743	743	744	744	744	745	745	745	745	745	745	745	745	745	745	745	745	742	689	673	666	665		
10	2100	2435	7734	760	18	06	773	688	81	21	00	00	01	01		745	743	743	743	743	743	743	743	744	744	744	744	744	745	745	745	745	745	745	745	745	745	745	745	745	745	737	685	673	666	660		
10	2115	2435	7734	760	18	06	773	688	81	21	00	00	01	01		748	743	743	743	743	743	743	743	743	743	744	744	744	744	744	744	745	745	745	745	745	745	745	745	745	745	735	695	673	664	662		
10	2130	2435	7734	765	18	06	773	688	81	21	00	00	01	01		761	747	746	745	745	745	745	745	745	745	745	745	746	746	746	746	746	747	747	747	747	747	747	747	747	747	740	695	676	666			
10	2145	2435	7734	765	18	07	752	661	81	21	00	00	01	01		755	747	746	745	745	745	746	746	746	746	746	746	746	746	747	747	747	748	748	748	748	748	748	748	748	748	745	700	678	668			
10	2200	2435	7734	765	18	07	752	661	81	21	00	00	01	01		755	749	747	745	745	745	746	746	746	747	747	747	747	746	746	747	748	748	748	748	748	748	748	748	748	748	745	695	676	668	662		
10	2215	2435	7734	765	18	07	752	661	81	21	00	00	01	01		755	749	746	744	744	744	745	745	745	746	746	746	746	746	746	747	748	748	748	748	748	748	748	748	747	747	747	747	739	685	677	668	662		
10	2230	2435	7734	761	18	07	752	661	81	21	00	00	01	01		755	748	745	744	744	744	744	745	745	745	745	745	745	745	745	745	746	747	747	747	748	748	748	748	748	748	739	695	678	668			
10	2245	2435	7734	760	05	04	748	668	81	21	00	00	01	01		755	747	745	744	744	744	744	745	745	745	745	745	745	745	745	745	746	747	747	747	747	747	747	747	746	747	738	695	677	667			
10	2300	2435	7734	754	05	04	748	668	81	21	00	00	01	01		746	743	743	743	743	744	744	744	744	744	744	744	744	744	744	745	745	746	746	746	746	746	746	746	746	746	734	693	673	664			
10	2315	2435	7734	753	05	04	748	668	81	21	00	00	01	01		747	743	742	743	743	744	743	743	743	743	743	743	743	743	744	746	747	747	747	748	747	748	746	746	746	746	735	690	674	665			
10	2330	2435	7734	748	05	04	748	668	81	21	00	00	01	01		748	743	742	743	743	743	743	743	743	743	743	743	743	743	744	745	747	747	747	747	747	747	747	747	746	746	733	684	674	666			
10	2345	2435	7734	746	05	04	748	668	81	21	00	00	02	01		747	742	740	740	740	740	740	740	740	740	740	741	742	743	744	745	745	746	747	747	747	746	746	747	747	746	730	677	671	664			
11	0000	2435	7734	744	36	08	741	683	82	23	00	00	02	01		744	741	741	739	739	739	739	739	739	739	739	739	740	741	742	742	742	741	741	741	741	741	740	740	740	740	724	672	661	657			
11	0015	2435	7734	743	36	08	741	683	82	23	00	00	02	01		742	739	738	738	738	738	738	738	738	738	738	739	739	740	741	741	741	741	741	741	741	741	741	740	740	740	728	674	662	657			
11	0030	2435	7734	745	36	08	741	683	82	23	00	00	02	01		745	745	743	743	744	744	744	744	745	745	745	745	745	746	747	748	748	748	747	748	748	748	748	746	747	737	682	660	663			
11	0045	2435	7734	743	36	08	741	683	82	23	00	00	02	01		746	742	741	741	741	742	742	742	742	742	742	743	743	744	745	746	746	746	745	745	745	745	745	745	744	733	683	669	651			
11	0100	2435	7734	743	36	09	735	675	82	23	00	00	02	02		741	741	741	738	738	738	738	738	738	738	738	738	738	740	741	741	740	740	740	740	740	740	739	740	740	739	727	672	660	654			
11	0115	2435	7734	743	36	09	735	675	82	23	00	00	02	02		741	740	740	740	740	740	740	740	740	740	740	740	740	740	741	741	741	741	742	742	741	740	740	741	740	741	725	672	662	657			
11	0130	2435	7734	743	36	09	735	675	82	23	00	00	02	02		741	738	739	739	739	739	739	739	738	738	738	738	738	740	741	741	741	741	741	741	741	741	741	740	740	741	727	674	663	657			
11	0145	2435	7734	744	36	09	735	675	82	23	00	00	02	02		742	738	738	738	738	738	738	738	738	738	738	739	739	741	742	742	741	741	741	741	741	740	740	740	740	740	723	671	662	657			
11	0200	2435	7734	745	36	09	730	674	82	22	00	00	02	02		742	740	740	740	740	740	740	740	740	741	741	741	741	742	743	744	744	743	742	742	742	742	742	742	742	742	720	675	663	658			

BATHYTHERMOGRAPH DATA

TONGUE OF THE OCEAN

MARCH 1960

DAY	TIME (GMT) HOURS	TIME (GMT) MINUTES	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (TENS)	WIND SPEED (knots)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS PRIM. FORM	CLOUDS AMOUNT	CLOUDS LOW TYPE	CLOUDS LOW AMOUNT	CLOUDS MED TYPE	CLOUDS MED AMOUNT	CLOUDS HIGH TYPE	CLOUDS HIGH AMOUNT	SEA HEIGHT (FEET)	SEA PERIOD (seconds)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
11	0215		2435	7734			744	36	09	730	674	82	22	00	00					02	02	742	741	741	740	740	740	740	740	740	741	741	741	742	742	743	745	744	744	744	743	744	743	743	742	742	743	731	678	664	659			
11	0230		2435	7734			741	36	09	730	674	82	22	00	00					02	02	744	743	742	742	742	742	743	743	743	742	743	743	744	744	744	745	746	746	746	745	745	745	745	745	745	732	681	667	661			
11	0245		2435	7734			742	36	09	730	674	82	22	00	00					02	02	741	740	740	740	740	740	740	740	740	740	741	741	742	742	742	742	743	742	742	742	741	741	741	741	741	741	731	680	668	661			
11	0300		2435	7734			743	36	10	730	670	82	22	00	00					02	02	742	742	741	741	741	741	742	742	742	742	742	743	743	743	744	746	746	746	746	745	745	745	744	743	744	745	731	684	669	661			
11	0315		2435	7734			742	36	10	730	670	82	22	00	00					02	02	741	741	741	742	742	742	742	742	742	742	742	742	742	742	744	745	746	745	744	745	744	744	743	743	743	743	730	692	670	661			
11	0330		2435	7734			741	36	10	730	670	82	22	00	00					02	02	741	741	741	741	742	743	743	743	743	743	743	743	744	744	745	745	745	745	744	743	743	743	743	743	743	729	690	668	661			
11	0345		2435	7734			741	36	10	730	653	81	21	00	00					02	02	741	741	741	741	742	743	743	742	742	742	742	742	743	743	744	745	745	745	744	743	743	743	742	742	743	743	729	690	669	661			
11	0400		2435	7734			741	36	10	730	653	81	21	00	00					02	02	742	742	742	742	742	743	744	744	744	744	743	743	743	744	744	745	746	745	745	745	744	745	744	744	744	744	730	697	669	662			
11	0415		2435	7734			741	36	10	730	653	81	21	00	00					02	02	741	741	742	742	742	743	744	745	746	745	744	743	743	745	745	745	746	747	746	745	744	743	743	743	743	744	728	693	670	663			
11	0430		2435	7734			742	36	10	730	653	81	21	00	00					02	02	741	741	741	742	742	743	743	744	745	745	745	745	745	745	745	746	746	746	746	746	745	744	744	743	743	743	730	690	670	664			
11	0445		2435	7734			742	36	08	728	651	81	21	00	00					02	02	741	741	741	741	742	743	744	745	745	745	745	745	745	745	745	746	746	746	745	744	743	743	743	743	743	728	693	670	663			
11	0500		2435	7734			742	36	08	728	651	81	21	00	00					02	02	740	740	740	41	742	743	743	744	745	745	745	745	745	745	745	745	745	746	746	745	745	745	745	743	743	743	744	730	700	671	664			
11	0515		2435	7734			742	36	08	728	651	81	21	00	00					02	02	741	741	742	743	743	744	745	746	747	747	747	747	747	747	747	747	747	747	747	747	746	745	744	744	745	746	742	697	672	666			
11	0530		2435	7734			742	36	08	728	651	81	21	00	00					02	02	742	742	743	743	744	744	745	747	747	747	747	747	747	747	747	747	747	747	747	747	746	746	744	744	745	746	737	699	670	663			
11	0545		2435	7734			744	26	08	728	660	00	00	00	00					02	02	741	742	742	743	743	744	745	746	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	746	746	747	738	700	672	664			
11	0600		2435	7734			742	36	08	728	660	00	00	00	00					02	02	743	743	744	745	746	747	748	749	749	749	749	749	749	749	750	750	750	750	750	750	749	748	748	748	748	749	745	712	673	667			
11	0615		2435	7734			742	36	08	728	660	00	00	00	00					02	02	743	743	744	745	746	747	748	748	748	748	748	749	749	749	749	749	749	749	748	748	748	747	747	747	745	707	673	666			
11	0630		2435	7734			741	36	08	728	660	00	00	00	00					02	02	741	741	741	742	742	742	746	746	745	743	743	743	746	747	747	747	747	747	747	746	745	745	744	744	745	743	710	682	678	672			
11	0645		2435	7734			741	36	08	730	668	00	00	00	00					02	01	743	743	744	745	746	747	748	748	748	747	747	747	748	748	748	748	748	748	748	748	748	748	748	748	748	748	707	675	670	665			
11	0700		2435	7734			739	36	08	730	668	00	00	00	00					02	01	744	744	744	745	745	746	747	748	748	748	748	748	748	748	748	748	748	748	750	750	750	750	750	749	748	750	748	700	671	669			
11	0715		2435	7734			738	36	08	730	668	00	00	00	00					02	01	744	744	745	745	745	745	746	747	749	748	748	748	748	748	748	748	747	747	749	750	750	750	750	749	749	749	749	690	671	668			
11	0730		2435	7734			735	36	08	730	668	00	00	00	00					02	01	743	743	743	744	744	745	745	745	746	745	745	745	746	747	748	748	749	749	749	749	750	750	749	749	749	748	749	746	685	672	670	663	661		
11	0745		2435	7734			735	36	08	730	668	00	00	00	00					02	01	740	740	740	740	740	740	740	740	740	740	741	742	742	742	742	742	742	742	742	743	743	742	742	741	742	731	680	667	662	658			
11	0800		2435	7734			735	36	06	722	666	00	00	00	00					02	01	742	742	743	43	743	743	743	744	746	747	748	749	749	749	749	750	750	750	750	750	750	749	749	749	749	731	700	673	669	661			
11	0815		2435	7734			735	36	06	722	666	00	00	00	00					02	01	747	747	745	743	743	742	742	746	748	748	748	748	749	749	750	750	750	750	750	749	748	748	748	748	748	749	733	691	671	665			
11	0830		2435	7734			735	36	06	722	666	00	00	00	00					02	01	747	747	746	745	744	743	743	749	749	749	749	749	749	750	750	750	750	750	749	749	749	749	749	749	749	739	692	671	666	660			
11	0845		2435	7734			735	36	06	722	666	00	00	00	00					02	01	749	748	748	746	744	744	744	744	744	744	746	749	749	749	749	749	750	750	750	750	750	749	749	749	749	731	679	670	667				
11	0900		2435	7734			736	02	07	724	666	00	00	00	00					02	01	748	748	748	747	744	743	742	742	742	742	742	742	742	744	748	749	748	748	750	749	749	748	748	749	728	687	671	669				
11	0915		2435	7734			737	02	07	724	666	00	00	00	00					02	01	748	748	748	748	748	747	745	745	745	745	745	744	744	744	744	746	748	749	748	749	750	750	750	749	748	749	730	691	672	669				
11	0930		2435	7734			738	02	07	724	666	00	00	00	00					02	01	748	748	748	748	748	747	746	746	745	745	744	744	743	744	745	747	748	748	748	750	750	750	749	749	749	749	724	691	671	667	660			
11	0945		2435	7734			737	02	07	724	666	00	00	00	00					02	01	749	749	748	748	748	746	745	745	745	746	748	749	749	748	749	750	750	750	750	750	749	749	748	749	749	748	732	689	672	669	660			
11	1000		2435	7734			736	02	06	721	671	81	21	00	00					02	01	748	748	748	748	748	747	745	745	746	747	748	749	748	748	748	749	750	750	750	749	748	748	748	748	748	748	732	710	672	669	661			
11	1015		2435	7734			736	02	06	721	671	81	21	00	00					02	01	745	745	744	745	745	744	744	744	744	744	746	749	749	749	749	748	748	749	749	749	749	749	748	748	748	748	734	679	669	663	658			
11	1030		2435	7734			736	02	06	721	671	81	21	00	00					02	01	748	748	748	746	745	744	744	744	744	744	745	746	750	750	750	749	748	750	750	750	749	749	748	748	748	748	748	737	679	660	663	659			
11	1045		2435	7734			735	02	06	721	671	81	21	00	00					02	01	748	748	748	748	748	748	748	748	748	746	744	744	744	744	745	748	750	750	749	749	750	750	750	749	749	746	728	673	669	666				
11	1100		2435	7734			735	09	07	722	670	82	22	00	00					02	01	748	748	748	748	748	748	748	748	747	745	745	743	743	744	748	748	748	748	748	750	749	749	749	748	748	745	729	672	669	668	660			
11	1115		2435	7734			735	09	07	722	670	82	22	00	00					02	01	748	748	748	748	748	748	748	748	748	746	746	746	748	749	749	749	748	750	750	750	749	749	749	747	748	747	728	672	669	668	661			
11	1130		2435	7734			740	09	07	722	670	82	22	00	00					02	01	748	748	748	748	748	747	747	747	746	746	746	747	749	749	749	748	748	750	751	751	750	750	750	749	748	746	725	675	670	667	662			
11	1145		2435	7734			741	12	07	730	681	82	23	00	00					02	01	745	745	747	748	748	748	748	747	746	746	746	750	750	750	750	750	750	750	751	751	751	750	750	749	749	745	726	674	670	660	659			
11	1200		2435	7734			742	12	07	730	681	82	23	00	00					02	01	746	747	747	747	747	747	747	747	746	746	746	747	749	749	749	748	747	746	747	749	749	749	749	749	748	746	725	674	670	665	658			

DAY	TIME GMT HOUR	TIME GMT MINUTES	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (TRUE)	WIND SPEED (KNOTS)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS TYPE	CLOUDS AMOUNT	CLOUDS LOW	CLOUDS MIDDLE	CLOUDS HIGH	SEA WAVE DIRECTION	SEA WAVE PERIOD (SECONDS)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
11	1215		2435	7734	743	12	07	730	681	82	23	00	00	02	01	750	750	750	750	750	750	750	750	750	750	750	751	752	753	752	752	753	754	754	754	754	754	753	752	741	730	678	674	669	662	
11	1230		2435	7734	742	12	07	730	681	82	23	00	00	02	01	746	746	746	746	746	746	746	747	747	747	747	746	748	749	749	749	748	748	748	750	750	750	750	749	748	733	723	674	670	667	661	
11	1245		2435	7734	744	13	07	755	700	82	23	00	00	02	01	746	746	747	747	747	747	748	748	748	748	748	748	748	747	749	750	750	750	749	750	750	750	750	749	748	745	719	673	669	663	659	
11	1300		2435	7734	744	13	07	755	700	82	23	00	00	02	01	746	746	746	746	746	746	746	746	746	747	747	747	748	748	749	749	749	748	747	750	749	749	749	749	748	746	720	675	669	661	659	
11	1315		2435	7734	745	13	07	755	700	82	23	00	00	02	01	746	748	748	748	748	749	749	748	748	748	748	749	749	752	752	752	752	752	753	754	754	752	752	751	751	745	713	679	662	667	653	
11	1330		2435	7734	744	13	07	755	700	82	23	00	00	02	01	745	747	747	747	747	747	746	746	746	747	746	746	746	748	749	748	748	747	746	749	750	750	749	748	748	745	716	674	669	662		
11	1345		2435	7734	744	14	08	780	717	85	26	00	00	02	02	748	749	749	749	748	748	748	749	749	749	749	747	750	752	752	751	750	750	750	751	752	749	749	749	749	745	714	678	669	662	659	
11	1400		2435	7734	744	14	08	780	717	85	26	00	00	02	02	744	744	744	746	747	747	746	746	747	747	748	748	749	749	749	748	748	747	750	750	750	749	749	749	748	716	673	669	654	659		
11	1430		2435	7734	745	14	08	780	717	85	26	00	00	02	02	746	746	746	746	746	746	745	745	745	745	745	746	747	748	748	748	749	749	748	749	749	748	748	747	748	748	718	685	660	654	660	
11	1445		2435	7734	747	16	10	789	703	84	25	00	00	02	02	749	749	749	749	748	748	748	748	748	747	747	748	751	751	752	752	752	750	750	751	752	752	751	751	751	750	721	688	672	668		
11	1500		2435	7734	748	16	10	789	703	84	25	00	00	02	02	744	744	744	743	743	743	743	744	744	744	744	744	744	746	746	746	746	745	744	746	747	746	747	748	746	744	719	683	668	660	658	
11	1515		2435	7734	748	16	10	789	703	84	25	00	00	02	02	744	744	744	743	743	743	743	744	744	744	744	744	744	746	747	748	747	747	747	746	746	748	748	747	748	747	748	720	683	670	662	658	655
11	1530		2435	7734	748	16	10	789	703	84	25	00	00	02	02	745	742	742	742	741	741	741	741	740	740	740	741	741	743	744	744	745	745	744	744	746	745	744	743	743	743	720	680	666	659	655	
11	1545		2435	7734	748	16	10	791	716	83	24	00	00	02	02	744	743	743	743	743	743	742	742	742	742	742	739	740	740	743	743	744	744	743	744	744	744	744	743	742	715	679	664	659			
11	1600		2435	7734	748	16	10	791	716	83	24	00	00	02	02	745	743	743	743	743	743	743	741	740	740	740	742	743	744	744	744	743	742	742	743	744	744	744	743	742	714	682	668	660	655		
11	1615		2435	7734	749	16	10	791	716	83	24	00	00	02	02	741	739	739	739	739	739	739	739	739	739	739	739	742	741	741	742	741	740	740	740	741	741	741	741	741	713	680	663	657			
11	1630		2435	7734	750	16	10	791	716	83	24	00	00	02	02	743	742	741	741	741	741	741	741	740	740	741	743	744	744	744	744	743	742	741	742	744	742	741	741	741	713	683	664	660			
11	1645		2435	7734	752	18	10	793	712	83	24	00	00	02	02	743	742	742	741	741	741	741	740	740	740	740	742	742	741	741	741	741	741	740	740	743	741	741	741	741	713	682	664	660			
11	1700		2435	7734	754	18	10	793	712	82	24	00	00	02	02	742	742	742	742	742	742	742	742	742	743	744	744	744	744	744	743	742	741	742	744	744	742	741	742	741	741	720	685	666	661		
11	1715		2435	7734	754	18	10	793	712	83	24	00	00	02	02	744	743	743	743	742	742	741	741	741	741	741	742	743	743	744	744	743	742	742	742	743	743	743	742	742	742	716	674	668	661	656	
11	1730		2435	7734	754	18	10	793	712	83	24	00	00	02	02	744	742	741	741	741	741	741	741	740	740	740	740	741	742	742	743	743	743	742	740	743	742	742	743	743	741	711	686	668	661	656	
11	1745		2435	7734	755	18	11	799	721	83	24	00	00	02	02	745	744	743	742	742	742	742	742	742	742	742	743	743	744	744	744	744	743	742	742	743	745	744	744	744	743	717	688	667	662		
11	1800		2435	7734	755	18	11	799	721	83	24	00	00	02	02	748	747	746	746	746	746	746	746	746	746	746	746	745	746	746	747	747	748	748	748	746	746	747	747	747	747	725	691	670	666		
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11	1830		2435	7734	755	18	11	799	721	83	24	00	00	02	02	748	747	746	746	746	744	744	744	745	745	746	747	747	746	746	746	747	747	747	745	747	747	747	747	747	746	747	717	689	670	667	
11	1845		2435	7734	754	14	11	801	721	83	24	00	00	02	02	751	749	748	747	746	745	745	745	745	745	744	746	746	746	746	747	747	747	747	746	745	747	747	747	747	746	746	740	690	670	667	
11	1900		2435	7734	756	14	11	801	721	83	24	00	00	02	02	750	749	748	747	745	745	745	745	745	744	744	745	746	746	746	746	747	746	745	744	746	747	746	746	746	746	720	692	670	666	658	
11	1915		2435	7734	756	14	11	801	721	83	24	00	00	02	02	750	749	747	745	744	743	745	745	744	744	745	746	747	747	746	745	745	748	747	745	747	747	747	747	747	743	720	680	667	662		
11	1930		2435	7734	758	14	11	801	721	83	24	00	00	02	02	747	748	746	744	743	743	743	743	743	743	743	744	744	744	744	745	745	746	745	743	747	746	745	746	747	745	718	695	669	663	659	
11	2000		2435	7734	758	14	12	807	723	82	22	00	00	02	02	750	750	749	748	748	747	748	748	748	748	748	748	748	748	748	748	748	748	748	747	746	749	749	748	748	749	749	720	700	673	668	
11	2015		2435	7734	757	14	12	807	723	82	22	00	00	02	02	750	750	749	749	748	748	747	747	747	747	748	748	748	748	748	748	748	747	747	747	747	748	748	748	748	748	748	715	693	670	668	
11	2030		2435	7734	756	14	12	807	723	82	22	00	00	02	02	750	749	748	748	748	748	747	747	746	747	748	748	748	748	748	747	746	745	745	745	746	747	748	747	747	747	746	720	694	671	668	660
11	2045		2435	7734	754	14	13	805	724	82	22	00	00	02	02	750	749	748	747	746	744	744	744	744	744	745	745	744	744	744	743	743	743	743	743	745	745	745	745	745	745	728	700	670	664	656	
11	2100		2435	7734	751	14	13	805	724	82	22	00	00	02	02	748	748	748	748	745	745	744	744	745	746	745	745	744	743	743	743	743	743	743	745	745	745	745	744	746	745	730	703	670	663		
11	2115		2435	7734	752	14	13	805	724	82	22	00	00	02	02	749	749	748	748	747	746	745	745	746	747	747	747	746	745	744	744	745	745	746	745	747	747	747	747	747	746	723	707	673	668	660	
11	2130		2435	7734	750	14	13	805	724	82	22	00	00	02	02	750	750	750	749	748	747	748	747	748	748	748	747	747	746	746	746	746	747	747	746	748	747	747	748	748	747	730	700	673	668	660	
11	2200		2435	7734	750	14	11	793	715	82	22	00	00	02	02	749	748	748	747	745	745	745	745	745	747	748	746	746	746	746	746	746	746	746	746	747	747	747	747	747	746	715	698	671	665	658	
11	2215		2435	7734	750	14	11	793	715	82	22	00	00	02	02	750	750	750	749	749	748	748	748	748	748	747	746	746	745	745	745	745	745	745	745	747	747	747	747	747	746	722	694	671	668		
11	2230		2435	7734	747	14	11	793	715	82	22	00	00	02	02	749	748	748	747	746	745	744	744	744	744	744	743	743	743	743	744	744	743	743	744	745	744	744	745	744	742	716	687	667	663		
11	2245		2435	7734	747	15	11	781	713	82	22	00	00	02	02	748	748	748	748	748	748	747	746	745	747	745	744	744	745	744	744	745	745	744	746	747	747	747	748	747	744	724	689	669	663	658	

BATHYTHERMOGRAPH DATA
TONGUE OF THE OCEAN
MARCH 1960

DAY	TIME GMT (HOUR MINUTE)	POSITION LATITUDE (DEGREES MINUTES)	POSITION LONGITUDE (DEGREES MINUTES)	SURF WATER TEMP	WIND DIRECTION (00-36)	WIND SPEED (knots)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS PREDOM TYPE / TOTAL AMOUNT	CLOUDS LOW TYPE / AMOUNT	CLOUDS MIDDLE TYPE / AMOUNT	CLOUDS HIGH TYPE / AMOUNT	SEA HEIGHT (feet)	SEA PERIOD (seconds)	000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
11	2300	2435	7734	747	15	11	781	713	82	22	00	00	02	02	747	747	748	748	748	748	746	745	745	745	745	744	744	745	745	745	744	745	746	747	747	747	747	747	747	746	720	689	668	660		
11	2315	2435	7734	742	15	11	781	713	82	22	00	00	02	02	747	747	748	748	748	747	748	747	746	746	745	745	744	744	744	744	744	745	747	747	748	748	748	748	748	745	727	688	668	660	659	
11	2330	2435	7734	742	15	11	781	713	82	22	00	00	02	02	749	749	749	749	748	747	746	745	745	746	746	746	746	744	744	745	745	746	747	747	747	747	747	747	747	746	728	684	667	660	654	
11	2345	2435	7734	742	16	09	763	721	02	21	31	00	02	01	750	750	750	750	749	749	749	748	748	748	748	748	747	747	746	746	746	747	748	748	747	747	747	747	747	747	720	690	669	662	658	
12	0000	2435	7734	741	16	09	763	721	02	21	31	00	02	01	748	749	749	749	748	747	746	746	746	745	746	746	746	745	745	745	745	746	747	747	747	747	747	747	747	747	716	689	667	660		
12	0015	2435	7734	741	16	09	763	721	02	21	31	00	02	01	750	750	750	750	749	749	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	746	714	679	668	660	655	
12	0030	2435	7734	741	16	09	763	721	02	21	31	00	02	01	750	750	750	750	749	749	748	746	746	746	746	746	746	746	746	747	747	747	747	747	747	747	747	747	746	743	719	678	667	661		
12	0045	2435	7734	741	16	09	763	721	02	21	31	00	02	01	750	750	750	750	750	748	747	747	747	748	748	748	748	747	747	747	748	748	748	748	748	748	748	748	748	743	712	675	664	659		
12	0100	2435	7734	741	16	08	750	700	82	23	00	00	02	01	750	750	750	750	749	749	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	741	709	677	669	661	656	
12	0115	2435	7734	736	16	08	750	700	82	23	00	00	02	01	750	750	750	50	750	749	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	742	701	672	665	660	655	651
12	0130	2435	7734	732	16	08	750	700	82	23	00	00	02	01	750	750	750	750	751	749	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	741	710	673	668	661	658	
12	0145	2435	7734	734	16	08	750	700	82	23	00	00	02	01	747	747	748	748	748	749	749	748	748	748	748	747	747	747	747	748	748	748	748	748	748	748	748	748	748	741	709	673	664	659		
12	0200	2435	7734	734	18	10	750	702	71	31	00	00	02	01	748	748	749	749	749	748	748	748	748	748	747	747	747	747	747	747	747	747	747	747	747	747	747	747	746	742	710	674	665	660		
12	0215	2435	7734	734	18	10	750	702	71	31	00	00	02	01	748	747	748	748	749	749	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	741	708	671	667	661		
12	0230	2435	7734	734	18	10	750	702	71	31	00	00	02	01	748	748	748	749	749	749	748	748	748	749	748	748	748	748	748	747	748	748	748	748	748	747	748	747	747	747	740	703	671	664	660	656
12	0245	2435	7734	733	18	05	750	703	71	51	00	00	02	01	748	748	748	748	748	749	748	747	747	747	747	747	747	747	747	747	747	747	747	747	747	748	748	748	748	741	710	673	668	662	659	
12	0300	2435	7734	731	18	05	750	703	71	51	00	00	02	01	749	748	748	749	749	749	748	747	747	747	747	747	747	747	747	747	748	748	748	749	748	749	749	749	748	742	710	673	667	662	659	
12	0315	2435	7734	730	18	05	750	703	71	51	00	00	02	01	747	748	748	748	749	749	748	748	748	748	748	748	748	748	748	748	748	748	748	747	748	749	749	748	747	742	710	673	668	662	660	
12	0330	2435	7734	730	18	05	750	703	71	51	00	00	02	01	750	750	751	751	751	751	750	750	750	750	750	750	750	750	750	750	751	751	751	751	750	750	752	752	750	745	710	676	671	666	663	
12	0345	2435	7734	730	18	07	738	698	71	51	00	00	01	01	748	748	748	748	750	750	747	746	748	749	749	748	747	747	747	747	747	747	747	747	747	747	747	747	748	743	733	674	669	663		
12	0400	2435	7734	734	18	07	738	698	71	51	00	00	01	01	748	748	748	48	748	749	748	748	748	748	748	748	748	748	748	748	748	748	747	747	746	747	748	748	744	737	700	670	663	660	658	
12	0415	2435	7734	732	18	07	738	698	71	51	00	00	01	01	748	748	748	748	748	749	748	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	746	743	715	674	666	664		
12	0430	2435	7734		18	07	738	698	71	51	00	00	01	01	747	748	748	748	748	749	748	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	743	715	674	667	663	660	
12	0445	2435	7734		18	07	738	698	32	00	32	00	02	01	747	747	747	748	748	749	748	747	747	747	747	747	747	747	747	747						747	748	749	748	744	722	685				
12	0530	2435	7734	740	18	07	738	698	32	00	32	00	02	01	750	750	750	750	750	750	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	745						
12	0545	2435	7734	745	25	09	740	705	84	25	00	00	02	02	749	749	749	749	749	749	748	748	748	748	748	748	748	748	748	748	748	747	747	747	746	747	747	747	747	743	725	685	672	669		
12	0600	2435	7734		25	09	740	705	84	25	00	00	02	02	750	750	750	750	750	749	749	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	749	749	749	749	724	683				
12	0615	2435	7734	740	25	09	740	705	84	25	00	00	02	02	750	750	750	750	750	750	749	748	748	748	748	750	750	750	750	750	749	749	749	749	749	749	749	749	749	743	724	683	677			
12	0630	2435	7734	740	25	09	740	705	84	25	00	00	02	02	750	750	750	750	750	750	749	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	743	722	679				
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12	0700	2435	7734	741	25	12	742	703	85	26	00	00	03	02	750	750	750	750	750	750	750	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	743	724	690				
12	0715	2435	7734	740	25	12	742	703	85	26	00	00	03	02	744	744	745	744	744	744	744	745	745	745	745	745	745	745	745	745	745	745	744	743	744	744	744	745	744	741	722	682				
12	0730	2435	7734	740	25	12	742	703	85	26	00	00	03	02	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	745	724	685				
12	0745	2435	7734	740	25	12	742	703	85	26	00	00	03	02	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	744	744	744	744	744	741	723	681				
12	0800	2435	7734	740	22	13	735	704	82	22	00	00	03	02	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	743	724	685				
12	0815	2435	7734	740	22	13	735	704	82	22	00	00	03	02	745	746	746	746	746	745	744	745	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	745	743	728	684	669			
12	0830	2435	7734	739	22	13	735	704	82	22	00	00	03	02	744	744	744	744	744	744	743	743	744	744	744	743	743	743	743	743	743	743	743	743	743	743	743	743	743	741	726	680				
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12	0900	2435	7734	741	23	13	730	702	83	24	00	00	03	02	743	743	742	742	742	742	742	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	742	724	680				
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MARCH 1960

DAY	TIME GMT HOUR	TIME GMT MINUTE	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (DD 36)	WIND SPEED (KNOTS)	AIR TEMPERATURE DRY BULB (0 1/1)	AIR TEMPERATURE WET BULB (0 1/1)	CLOUDS TYPE LOW	CLOUDS AMOUNT LOW	CLOUDS TYPE MED	CLOUDS AMOUNT MED	CLOUDS HIGH	CLOUDS AMOUNT HIGH	SEA HEIGHT (FEET)	SEA PERIOD (SECS)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
12	0930		2435	7734	742		23	12	730	702	83	24	00	00	03	02	745	745	745	744	744	743	743	743	743	743	744	745	745	745	745	745	745	745	745	745	744	744	744	744	743	741	724	682					
12	0945		2435	7734	741		23	13	730	702	83	24	00	00	03	02	744	744	744	743	743	743	743	743	743	743	744	745	745	745	745	745	745	744	744	744	744	744	744	744	745	744	741	727	686				
12	1000		2435	7734	740		26	14	730	699	83	24	00	00	03	02	744	744	744	744	744	744	743	743	743	743	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	742	724	682					
12	1015		2435	7734	742		26	14	730	699	83	24	00	00	03	02	745	745	745	745	745	745	745	744	744	744	745	745	745	745	746	746	746	745	745	745	745	745	746	744	743	742	726	688					
12	1030		2435	7734	743		26	14	730	699	83	24	00	00	03	02	745	745	745	745	745	744	744	743	743	742	742	746	746	747	747	747	747	746	746	746	746	745	745	746	743	742	724	680					
12	1045		2435	7734	744		26	14	730	699	83	24	00	00	03	02	743	742	742	742	742	742	742	742	742	741	741	742	742	743	743	744	743	743	743	743	743	742	742	742	742	741	721	676					
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12	1115		2435	7734	740		27	12	730	691	86	23	00	12	03	02	742	742	742	742	742	742	742	742	742	742	742	742	742	743	744	745	746	746	746	746	746	745	744	742	742	742	726	674	665				
12	1130		2435	7734	740		27	12	730	691	86	23	00	12	03	02	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	742	743	745	745	745	745	745	745	743	726	668	667	660					
12	1145		2435	7734	740		27	12	730	691	86	23	00	12	03	02	742	742	742	742	742	742	742	742	742	742	744	744	744	745	745	745	745	745	745	745	745	745	745	744	726	679	665	659					
12	1200		2435	7734	741		24	11	741	700	35	22	44	00	03	02	745	745	745	744	744	744	743	743	742	743	743	742	744	745	745	745	746	746	746	746	746	745	745	745	745	741	723	678	664	659			
12	1215		2435	7734	740		24	11	741	700	35	22	44	00	03	02	742	742	742	742	742	742	742	742	742	741	741	741	742	742	742	743	743	743	743	743	743	742	742	742	742	738	719	672	661	659			
12	1230		2435	7734	740		24	11	741	700	35	22	44	00	03	02	745	745	745	745	745	745	744	744	744	744	744	744	744	744	744	745	745	745	745	745	745	745	745	745	745	739	717	675	665				
12	1245		2435	7734	745		26	10	740	697	83	22	00	92	03	02	744	744	744	744	744	744	744	744	743	742	742	742	742	743	744	744	746	746	746	746	746	746	745	744	742	741	715	673	665				
12	1300		2435	7734	745		26	10	740	697	83	22	00	92	03	02	745	745	745	745	745	745	745	745	745	745	745	745	745	746	746	746	746	746	746	746	746	746	746	747	747	741	719	672	665				
12	1315		2435	7734	742		26	10	740	697	83	22	00	92	03	02	742	742	742	742	742	742	742	742	742	742	742	742	742	743	743	743	743	743	743	743	744	744	744	744	744	739	720	669	661				
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12	1430		2435	7734	740		26	11	725	693	83	22	00	00	02	02	746	746	746	746	746	746	746	746	746	746	746	746	745	745	745	746	747	748	748	748	748	748	748	748	748	740	722	674	668	666	659	657	
12	1445		2435	7734	745		25	11	770	719	82	22	00	00	02	02	745	746	746	746	746	746	746	746	746	745	745	745	745	745	745	745	746	746	746	747	747	747	747	747	747	739	712	672	664	662	658	656	
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12	1515		2435	7734	746		25	11	770	719	82	22	00	00	02	02	746	747	747	746	746	746	746	745	745	744	743	743	743	744	744	746	746	746	746	746	746	746	746	746	746	742	705	672	666	663	659	656	
12	1530		2435	7734	748		25	11	770	719	82	22	00	00	02	02	748	747	746	746	746	746	746	746	746	744	744	744	744	745	745	745	746	746	746	747	747	747	747	746	747	745	727	673	669	665	660	656	
12	1545		2435	7734	750		24	10	783	729	84	25	00	00	02	02	749	749	748	748	747	747	746	746	746	746	746	745	745	744	746	747	747	748	748	748	748	748	748	746	746	744	725	672	669	663	660	658	
12	1600		2435	7734	750		24	10	783	729	84	25	00	00	02	02	750	749	748	747	747	746	746	746	746	746	746	746	746	746	747	747	748	748	748	748	748	748	748	747	747	745	727	675	667	666	663	660	
12	1615		2435	7734	750		24	10	783	729	84	25	00	00	02	02	749	748	747	746	744	743	743	743	743	743	744	744	744	744	744	744	745	746	746	746	745	750	750	750	750	742	723	670	668	665				
12	1630		2435	7734	749		24	10	783	729	84	25	00	00	02	02	750	750	749	748	747	746	745	745	745	745	745	744	744	744	744	744	745	746	747	747	747	747	747	747	747	743	725	673	669	665	663		
12	1645		2435	7734	746		34	16	745	703	86	28	00	00	03	02	750	749	748	748	748	747	746	746	745	745	745	745	745	745	746	747	748	748	748	748	748	748	748	748	748	742	724	675	669	668	663		
12	1700		2435	7734	745		34	16	745	703	86	28	00	00	03	02	749	748	745	745	743	743	743	743	743	743	743	743	743	744	744	744	744	745	745	746	747	747	747	747	747	747	740	723	671	667			
12	1715		2435	7734	745		34	16	745	703	86	28	00	00	03	02	750	748	747	747	745	744	744	744	744	744	744	744	744	744	744	744	744	745	745	746	774	677	745	744	745	746	740	727	674	668				
12	1730		2435	7734	745		34	16	745	703	86	28	00	00	03	02	749	748	747	747	746	744	744	744	744	744	744	744	744	744	744	744	744	745	745	745	746	746	746	745	745	746	741	726	669				
12	1745		2435	7734	742		34	16	745	703	86	28	00	00	03	02	750	749	749	748	746	744	743	743	743	743	743	743	743	743	743	744	746	746	746	746	746	747	748	748	748	739	727	684					
12	1800		2435	7734	742		33	19	751	701	85	36	00	00	03	02	749	749	748	747	745	744	743	743	743	743	743	743	743	743	743	743	745	746	747	747	747	743	747	747	747	740	727	690	672	668	661	658	
12	1815		2435	7734	746		33	19	751	701	85	36	00	00	03	02	749	749	749	746	746	745	744	744	744	744	743	743	743	743	743	743	743	746	746	746	747	747	747	747	747	743	732	702	674	668	660	656	
12	1830		2435	7734	747		33	19	751	701	85	36	00	00	03	02	749	749	749	748	745	745	744	744	743	743	743	743	743	742	743	743	744	746	746	747	747	747	748	747	746	746	744	729	700	673	667	660	657
12	1845		2435	7734	747		34	22	735	698	85	26	00	00	03	02	749	749	748	745	744	744	743	743	743	743	743	743	743	743	743	743	744	744	745	745	744	744	746	745	741	730	705	673	667	660	654		
12	1900		2435	7734	747		34	22	735	698	85	26	00	00	03	02	748	748	748	748	743	743	742	742	742	742	742	742	742	742	742	742	744	744	744	745	745	744	743	744	744	738	728	695	671	663	659	652	
12	1915		2435	7734	746		34	22	735	698	85	26	00	00	03	02	748	748	748	745	744	742	742	742	741	741	742	742	742	742	742	742	743	743	744	745	745	747	746	744	743	739	729	700	671	664	656		
12	1930		2435	7734	745		34	22	735	698	85	26	00	00	03	02	748	748	748	748	747	745	743	743	743	743	742	742	742	742	742	742	743	745	747	748	748	748	748	747	747	741	729	700	672	668	660		
12	1945		2435	7734	744		02	23	730	689	85	26	00	00	03	02	750	750	749	748	747	745	744	744	743	742	742	742	742	742	742	743	743	743	747	747	748	748	748	748	747	741	726	700	673	663	659		

DAY	TIME GMT HOUR	TIME GMT MINUTES	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (TENS)	WIND SPEED (KNOTS)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS TYPE AMOUNT	CLOUDS LOW TYPE	CLOUDS LOW AMOUNT	CLOUDS MIDDLE TYPE	CLOUDS MIDDLE AMOUNT	CLOUDS HIGH TYPE	CLOUDS HIGH AMOUNT	SEA HEIGHT (FEET)	SEA PERIOD (SECONDS)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
12	2000		2435	7734			745	02	23	730	689	85	26	00	00	03	02					745	745	745	745	745	746	744	744	744	744	744	744	744	744	744	743	745	745	745	745	745	745	745	745	745	742	727	705	675	668	651	656
12	2015		2435	7734			746	02	23	730	689	85	26	00	00	03	02					750	752	752	752	752	750	748	748	748	748	748	747	747	747	747	747	747	748	750	750	750	750	750	750	750	745	724	705	677	668	662	
12	2030		2435	7734			746	02	23	730	689	85	26	00	00	03	02					746	746	746	745	743	742	742	742	742	742	742	742	742	742	742	742	742	742	743	745	746	747	747	747	745	728	713	675	667	660		
13	1815		2435	7734			734	06	10	683	609	84	25	00	00	02	02					745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	743	739	737	712	695	672	678	663				
13	1830		2435	7734			732	06	10	683	609	84	25	00	00	02	02					746	746	745	745	745	744	742	745	745	745	745	745	745	745	745	745	745	745	745	745	743	740	738	737	722	698	681	668	663			
13	1845		2435	7734			736	06	10	683	609	84	25	00	00	02	02					746	746	745	745	745	745	745	745	745	745	745	746	746	746	746	746	746	746	746	745	741	739	737	705	689	676	666	662				
13	1900		2435	7734			735	06	09	685	615	84	25	00	00	02	02					743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	743	740	737	735	725	700	684	670	662			
13	1915		2435	7734			738	06	09	685	615	84	25	00	00	02	02					745	745	745	744	743	743	743	743	743	743	743	743	743	743	743	744	745	745	745	746	747	747	744	740	738	734	701	687	670	664		
13	1930		2435	7734			742	06	09	685	615	84	25	00	00	02	02					745	745	744	743	743	743	743	743	743	743	743	743	743	743	743	743	743	744	745	746	745	741	738	737	732	701	686	669	664			
13	1945		2435	7734			742	06	09	685	615	84	25	00	00	02	02					747	746	745	744	743	743	743	743	743	743	743	743	743	743	743	743	743	744	744	745	745	746	746	743	739	736	734	701	685	670	666			
13	2000		2435	7734			740	07	08	680	608	84	25	00	00	02	02					746	745	745	744	743	743	742	742	742	742	742	742	742	742	742	742	742	744	746	746	746	743	742	737	736	701	688	670	667			
13	2015		2435	7734			740	07	08	680	608	84	25	00	00	02	02					745	745	745	744	743	743	742	742	742	742	742	742	742	742	742	742	743	743	744	746	746	742	741	735	735	700	684	670	666			
13	2030		2435	7734			739	07	08	680	608	84	25	00	00	02	02					745	745	744	744	743	743	743	743	743	743	743	743	743	743	743	743	743	744	744	746	746	743	738	736	735	702	687	671	668			
13	2045		2435	7734			741	07	08	680	608	84	25	00	00	03	03					746	746	745	745	745	745	745	745	745	745	745	745	746	746	748	748	748	749	750	751	750	748	741	741	730	699	680	676	670			
13	2100		2435	7734			742	07	10	680	610	83	24	00	00	03	03					748	747	747	747	747	747	747	747	747	747	747	747	747	747	748	748	748	748	748	749	751	715	751	750	742	742	730	700	680	674	668			
13	2115		2435	7734			740	07	10	680	610	83	24	00	00	03	03					748	748	747	746	746	746	746	746	746	746	746	746	746	747	748	748	748	748	750	751	751	749	742	741	726	697	679	674	667			
13	2130		2435	7734			741	07	10	680	610	83	24	00	00	03	03					748	748	747	747	747	747	747	747	747	747	747	747	747	747	747	747	748	749	750	751	751	750	748	741	740	728	699	680	674	669			
13	2145		2435	7734			740	07	10	680	610	83	24	00	00	03	03					749	748	748	747	747	747	746	746	746	746	746	746	746	747	748	748	748	749	750	750	750	748	741	740	729	699	681	677	670			
13	2200		2435	7734			740	10	14	679	608	84	25	00	00	03	03					747	746	746	745	745	745	745	745	745	745	745	745	745	746	746	747	748	749	749	750	750	747	740	740	723	696	682	677	668			
13	2215		2435	7734			735	10	14	679	608	84	25	00	00	03	03					747	747	746	745	745	745	745	745	745	745	745	745	746	746	746	748	748	749	749	750	750	750	747	740	740	727	698	682	677	667			
13	2230		2435	7734			726	10	14	679	608	84	25	00	00	03	03					749	749	749	749	748	748	749	749	749	749	749	749	749	749	750	750	751	751	751	752	752	752	751	743	742	732	700	688	680	671			
13	2245		2435	7734			730	10	14	679	608	84	25	00	00	03	03					749	749	749	749	749	748	749	749	749	749	749	749	749	749	750	751	751	751	752	753	753	753	751	743	742	730	699	688	680	671			
13	2300		2435	7734			735	08	14	680	609	84	25	00	00	03	03					747	747	747	748	748	747	745	746	746	746	746	746	746	746	746	748	748	748	749	749	749	748	741	739	729	699	684	677	669			
13	2330		2435	7734			736	08	14	680	609	84	25	00	00	03	03					750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	751	753	753	753	753	753	753	743	741	724	695	684	673	665			
13	2345		2435	7734			735	08	11	677	612	84	25	00	00	03	02					744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	746	747	748	749	750	749	748	736	732	720	693	674	665	660		
14	0015		2435	7734			735	08	11	677	612	84	25	00	00	03	02					744	744	745	746	746	747	747	748	748	749	749	749	749	750	750	750	751	752	753	753	752	732	730	715	690	672	663					
14	0030		2435	7734			735	08	11	677	612	84	25	00	00	03	02					743	743	743	743	743	743	743	743	743	744	744	745	745	745	746	746	747	747	748	749	749	749	749	737	733	719	692	679	666			
14	0045		2435	7734			730	08	12	681	610	84	25	00	00	03	02					742	742	742	742	742	742	743	743	743	743	743	744	744	744	744	745	745	745	747	748	748	749	748	738	733	724	715	679	666			
14	0100		2435	7734			733	08	12	681	610	84	25	00	00	03	02					742	743	743	743	743	743	743	743	744	744	744	744	745	745	745	747	747	747	747	748	749	749	748	738	733	724	694	680	667			
14	0115		2435	7734			735	08	12	681	610	84	25	00	00	03	02					743	744	744	744	744	744	745	745	746	746	747	747	747	748	748	748	748	748	748	749	749	750	747	740	734	725	695	682	668	662			
14	0130		2435	7734			735	08	12	681	610	84	25	00	00	03	02					743	744	744	744	745	745	745	745	745	745	746	746	746	747	747	748	749	749	748	749	748	750	749	740	734	725	695	682	668	662			
14	0145		2435	7734			735	08	10	680	614	82	22	00	00	01	01					740	740	740	740	740	741	742	742	742	743	743	743	743	743	743	743	744	745	746	745	745	747	746	740	733	725	701	679	666	659			
14	0200		2435	7734			740	08	10	680	614	82	22	00	00	01	01					745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	746	746	747	748	750	750	750	750	740	735	726	699	681	670	660			
14	0215		2435	7734			738	08	10	680	614	82	22	00	00	01	01					745	745	745	745	745	745	745	745	745	746	746	746	746	746	745	748	750	750	750	750	750	750	741	735	729	702	682	671	660			
14	0230		2435	7734			736	08	10	680	614	82	22	00	00	01	01					744	744	744	744	744	744	744	744	744	744	744	745	745	745	746	746	748	749	749	750	750	750	748	737	730	710	683	672	661			
14	0245		2435	7734			736	08	10	680	614	82	22	00	00	01	01					745	745	745	745	745	745	745	745	745	746	746	746	746	747	748	750	750	750	750	750	751	750	748	735	728	708	681	671	660			
14	0300		2435	7734			735	08	12	682	610	82	22	00	00	01	01					740	740	740	740	740	740	741	741	741	741	741	742	742	742	742	743	744	745	745	745	745	746	747	745	735	725	700	678	667	660			
14	0315		2435	7734			739	08	12	682	610	82	22	00	00	01	01					742	742	742	742	742	742	742	742	742	742	742	742	743	743	743	744	746	747	748	748	748	748	750	750	745	735	726	699	680	672	665			
14	0330		2435	7734			738	08	12	682	610	82	22	00	00	01	01					741	741	742	742	742	742	742	742	743	744	744	745	745	746	747	748	748	748	749	749	750	750	749	745	732	720	690	676	678	659			
14	0345		2435	7734			737	08	12	682	610	82	22	00	00	01	01					742	742	742	743	744	745	745	746	746	747	747	747	747	747	748	748	749	749	750	750	750	750	749	748	731	719	690	677	668			

DAY	TIME GMT	POSITION				SURF WATER TEMP	WIND		AIR TEMPERATURE		CLOUDS				SEA		TEMPERATURES AT DEPTH																							
		LATITUDE		LONGITUDE			DIRECTION (TO)	SPEED (KNOTS)	DRY BULB (0.1°F)	WET BULB (0.1°F)	TYPE	AMOUNT	HEIGHT	TYPE	AMOUNT	HEIGHT	TYPE	AMOUNT	HEIGHT	HEIGHT (FEET)	PERIOD (SECS)	000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
	HOURS	MINUTES	DEGREES	MINUTES	DEGREES	MINUTES																																													
14	0400	2435	7734	735	07	10	691	630	82	22	00	00	01	01	741	741	742	742	742	743	744	744	745	745	745	745	746	746	747	748	749	749	749	750	750	750	749	738	731	718	689	678	669								
14	0415	2435	7734	739	07	10	691	630	82	22	00	00	01	01	741	741	742	742	743	743	744	744	745	745	746	746	747	748	748	748	748	749	749	750	750	750	749	738	730	722	688	677	669								
14	0430	2435	7734	735	07	10	691	630	82	22	00	00	01	01	740	740	741	741	741	741	742	742	742	742	742	742	742	742	742	742	743	746	746	747	747	748	747	738	728	720	683	673	666								
14	0445	2435	7734	738	07	10	691	630	82	22	00	00	02	01	741	742	742	742	742	742	743	743	744	745	745	746	746	746	746	746	747	748	749	750	750	750	750	740	730	722	686	678	670								
14	0500	2435	7734	730	07	11	690	621	82	22	00	00	02	01	740	740	740	740	740	740	741	741	741	741	741	742	742	742	742	742	742	743	744	744	745	746	745	734	726	721	683	673	667								
14	0515	2435	7734	735	07	11	690	621	82	22	00	00	02	01	741	741	742	743	743	744	744	744	745	745	746	746	747	747	747	747	748	748	749	749	750	750	750	741	729	723	692	678	670								
14	0530	2435	7734	720	07	11	690	621	82	22	00	00	02	01	741	741	742	742	742	743	743	744	744	745	745	746	746	747	747	747	747	748	749	749	749	750	750	741	729	722	691	678	670								
14	0545	2435	7734	731	07	11	690	621	82	22	00	00	02	01	741	741	742	742	742	743	743	744	744	745	745	745	746	746	746	746	746	748	748	745	749	749	750	741	729	722	692	679	670								
14	0600	2435	7734	738	09	11	684	614	87	29	00	00	02	01	741	741	741	742	742	742	742	742	743	743	743	743	744	745	745	745	745	747	748	748	749	749	749	742	729	722	700	679	669								
14	0615	2435	7734	735	09	11	684	614	87	29	00	00	02	01	741	742	742	743	743	744	744	745	746	747	747	748	748	748	748	748	748	748	749	749	750	750	750	748	731	728	701	681	672								
14	0630	2435	7734	736	09	11	684	614	87	29	00	00	02	01	741	741	741	741	741	741	741	742	742	742	742	742	742	742	743	744	745	747	747	747	748	748	748	742	730	724	700	679	671								
14	0645	2435	7734	730	09	11	684	614	87	29	00	00	02	01	741	741	742	742	742	743	743	744	744	745	745	746	746	746	746	747	747	748	748	749	749	750	750	749	731	729	721	680	673								
14	0700	2435	7734	735	09	12	682	614	85	26	00	00	02	01	740	741	741	741	741	742	742	742	742	742	743	743	744	744	745	745	746	747	748	748	748	749	749	748	731	729	721	679	673	668							
14	0715	2435	7734	734	09	12	682	614	85	26	00	00	02	01	741	741	741	742	742	742	743	743	744	744	745	745	746	746	746	746	747	747	748	748	749	749	749	750	748	732	728	722	679	673	668							
14	0730	2435	7734	734	09	12	682	614	85	26	00	00	02	01	741	741	742	742	742	742	742	743	743	743	744	744	744	745	746	746	747	747	748	748	748	748	749	749	733	730	722	679	672	662							
14	0745	2435	7734	736	09	12	682	614	85	26	00	00	02	01	740	740	741	741	741	741	741	741	742	742	742	742	742	742	742	743	743	744	745	747	747	748	744	731	727	711	678	671	661							
14	0800	2435	7734	735	07	11	681	615	87	28	00	00	02	01	741	742	742	743	743	743	744	744	744	745	745	746	747	747	747	747	748	748	748	748	748	749	750	750	735	731	723	681	672	663						
14	0815	2435	7734	735	07	11	681	615	87	28	00	00	02	01	742	742	742	743	743	744	744	744	744	745	746	747	747	747	747	748	748	748	748	748	748	749	750	750	743	734	731	722	681	671	663						
14	0830	2435	7734	735	07	11	681	615	87	28	00	00	02	01	741	741	741	742	742	743	743	743	744	744	745	746	747	747	747	747	748	748	749	749	749	749	750	750	749	736	731	723	682	671	663						
14	0845	2435	7734	736	07	11	681	615	87	28	00	00	02	01	740	741	741	742	742	742	742	742	743	743	743	743	744	745	745	745	745	746	747	748	749	749	749	744	734	732	723	682	671	661						
14	0900	2435	7734	736	07	12	680	614	82	22	00	00	02	01	740	741	741	742	742	742	742	743	744	745	745	746	747	747	747	748	748	748	748	749	749	749	750	744	737	733	723	682	671	662						
14	0915	2435	7734	736	07	12	680	614	82	22	00	00	02	01	740	740	740	740	740	740	741	741	741	741	741	741	741	741	742	742	742	743	743	744	746	747	743	733	731	720	679	667	660						
14	0930	2435	7734	735	07	12	680	614	82	22	00	00	02	01	740	741	741	741	742	742	742	743	743	744	744	745	745	745	746	746	746	747	747	748	749	749	750	748	738	733	721	682	671	662						
14	0945	2435	7734	734	07	12	680	614	82	22	00	00	03	01	740	741	741	741	742	742	742	743	743	744	744	745	745	746	746	747	748	747	748	749	749	750	750	743	739	734	722	685	672	665						
14	1000	2435	7734	736	07	13	680	610	81	21	00	00	03	01	740	741	742	742	742	742	743	743	744	744	745	745	746	746	745	745	745	745	745	746	747	748	749	748	739	732	720	681	671	662						
14	1015	2435	7734	732	07	13	680	610	81	21	00	00	03	01	741	741	741	742	742	742	742	743	743	744	745	745	746	746	747	747	747	747	747	748	749	749	750	748	739	733	721	683	671	662						
14	1030	2435	7734	734	07	13	680	610	81	21	00	00	03	01	741	741	742	742	743	743	744	744	745	745	746	746	747	747	747	747	748	748	748	748	748	750	750	750	744	741	737	721	682	671	662						
14	1045	2435	7734	733	07	13	680	610	81	21	00	00	03	01	741	742	742	742	743	743	744	745	745	746	746	747	747	748	748	748	748	748	748	748	748	750	750	743	742	739	718	683	671	661						
14	1100	2435	7734	735	07	12	680	610	72	62	00	00	03	02	741	742	742	742	742	742	742	743	743	744	745	745	745	745	745	746	746	747	747	748	748	749	749	750	744	741	739	718	681	671	660						
14	1115	2435	7734	735	07	12	680	610	72	62	00	00	03	02	741	741	741	742	742	742	742	743	743	744	745	745	745	745	745	746	746	746	747	748	748	750	748	742	741	737	731	678	671	661						
14	1130	2435	7734	735	07	12	680	610	72	62	00	00	03	02	741	741	742	742	742	742	743	744	744	745	745	746	746	746	746	746	746	746	747	748	749	750	750	745	742	737	720	678	671	661						
15	2115	2428	7729	735	16	17	790	726	81	21	00	00	03	02	740	743	743	743	743	743	744	746	747	748	748	748	749	749	749	749	750	750	750	750	750	750	749	748	744	733	713	693	678	664	658	651				
15	2215	2429	7729	746	16	17	790	726	81	21	00	00	03	02	745	745	745	745	745	745	745	746	747	747	748	748	748	749	750	750	750	750	750	750	750	750	747	745	735	720	696	678	669							
16	0215	2415	7723	745	17	16	757	713	00	00	00	00	03	02	746	747	748	748	748	749	750	751	751	752	753	753	754	754	754	754	754	754	754	754	754	754	751	743	729	710	688	674	663	659						
16	0300	2408	7723	742	17	17	751	710	00	00	00	00	03	02	748	748	748	749	749	750	750	750	750	750	750	751	751	754	754	754	753	753	753	753	753	750	750	727	703	684	678	665	656	652	647					
16	0440	2400	7724	740	14	14	750	720	82	22	00	00	03	02	745	744	745	746	747	747	747	747	747	748	748	750	751	751	751	751	752	752	751	751	751	751	750	749	710	695	677									
16	0545	2401	7724	745	18	14	751	720	82	22	00	00	03	02	744	745	745	746	746	746	746	746	746	747	750	750	751	751	751	751	751	751	751	751	751	751	749	728	714	695	678									
16	0630	2400	7720	740	18	13	750	721	82	22	00	00	03	02	746	746	747	747	747	747	747	747	747	747	747	747	747	748	751	751	751	751	751	751	751															
16	0714	2402	7718	736	18	13	750	721	82	22	00	00	03	02	745	746	746	747	747	747	747	747	748	749	749	749	751	751	751	751	751	751	751	751	750	750	746	738	720	702	687	669	670	662						
16	0927	2401	7715	735	18	13	750	720	35	22	54	00	03	02	748	748	748	748	748	748	749	749	750	750	750	750	751	751	751	751	751	751	751	751	751	751	751	746	735	730	710	705	688	768						

BATHYTHERMOGRAPH DATA
TONGUE OF THE OCEAN
MARCH 1960

DAY	TIME GMT (HOUR MINUTE)	POSITION LATITUDE (DEGREES MINUTES)	POSITION LONGITUDE (DEGREES MINUTES)	SURF WATER TEMP	WIND DIRECTION (00-36)	WIND SPEED (knots)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS PREDOM TYPE / TOTAL AMOUNT	CLOUDS LOW TYPE / AMOUNT	CLOUDS MIDDLE TYPE / AMOUNT	CLOUDS HIGH TYPE / AMOUNT	SEA HEIGHT (feet)	SEA PERIOD (seconds)	000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
16	1000	2358	7715	740	18	14	750	720	82	22	00	00	03	02	746	747	748	748	748	748	749	749	750	751	751	751	751	752	752	752	752	752	752	752	752	752	751	748	736	719	701	688	674			
16	1030	2356	7715	740	18	14	750	720	82	22	00	00	03	02	747	748	748	749	749	750	751	751	751	751	751	752	752	752	752	753	753	753	753	750	750	749	749	746	745	738	705	680	672	661		
16	1100	2351	7715	741	18	13	751	720	82	22	00	00	03	02	749	749	749	750	750	751	751	751	751	751	751	751	751	752	752	753	754	754	754	754	753	752	751	749	739	725	701	684	673	662		
16	1145	2349	7716	745	18	14	751	722	82	22	00	00	03	02	751	751	751	751	751	751	752	752	753	753	754	754	754	754	755	756	757	757	757	756	756	753	753	744	736	729	701	680	667	659		
16	1230	2350	7716	742	18	14	751	722	82	22	00	00	03	02	752	752	752	753	753	753	754	755	756	756	756	756	756	756	756	756	755	754	755	755	753	752	752	750	743	730	702	680	661			
16	1334	2357	7719	755	16	13	760	732	81	21	00	00	02	02	746	746	746	747	748	749	751	752	752	752	752	753	753	753	754	754	754	754	754	753	750	750	750	744	731	709	693	674				
16	1405	2357	7719	755	16	13	760	732	81	21	00	00	02	02	744	745	746	747	748	748	749	750	750	750	751	752	752	752	752	752	752	752	752	753	752	752	752	740	735	705	685	671				
16	1530	2401	7722	755	16	13	760	732	81	21	00	00	02	02	742	742	742	742	743	743	743	744	746	748	749	749	749	750	752	752	752	752	752	752	753	753	752	750	734	692	681	675	661	659	652	648
16	1600	2407	7724	783	16	13	763	740	81	21	00	00	02	02	745	745	745	746	747	747	747	748	748	748	748	748	749	750	750	750	750	750	750	750	749	749	744	719	706	686	679	670	662	658		
16	1700	2419	7731	762	19	14	768	740	82	23	00	00	03	02	741	741	741	741	741	742	742	742	742	742	742	743	743	743	744	744	744	744	744	745	746	747	743	737	720	699	680	668				
16	2100	2420	7738	762	16	19	762	740	82	23	00	00	03	02	745	746	745	745	745	745	745	745	745	745	745	746	747	749	749	751	750	750	750	749	746	743	740	725	694	671	664	659	655	659		
16	2115	2420	7738	757	16	19	762	740	82	23	00	00	03	02	745	744	745	744	744	742	742	743	743	743	744	745	746	747	747	747	747	747	747	746	745	742	738	728	691	671	662	659	653	649		
16	2130	2420	7738	752	16	19	762	740	82	23	00	00	03	02	747	746	746	746	746	745	746	746	746	746	746	747	748	749	750	750	750	750	750	749	748	743	740	720	695	675	665	650	655			
16	2145	2420	7738	752	16	19	762	740	83	24	00	00	03	02	745	745	747	747	746	746	746	747	747	747	748	748	749	749	750	750	751	751	750	750	749	745	741	730	695	675	665	651	655	652		
16	2200	2420	7738	752	16	17	770	750	83	24	00	00	03	02	745	745	745	744	743	742	742	743	743	744	745	744	745	746	746	747	748	748	747	746	746	742	739	728	695	675	664	659	652	650		
16	2215	2420	7738	752	16	17	770	750	83	24	00	00	03	02	750	750	749	749	748	748	748	750	749	749	749	749	749	749	749	749	751	751	750	750	749	745	744	732	699	675	665	663	655			
16	2230	2420	7738	751	16	17	770	750	83	24	00	00	03	02	746	747	748	748	747	746	746	748	749	749	749	748	748	748	748	749	751	751	750	750	749	747	744	735	699	679	670	664	656	653		
16	2330	2420	7738	750	16	17	771	748	83	24	00	00	03	02	749	749	749	749	748	748	748	750	750	750	750	750	750	750	750	750	750	750	751	751	751	745	745	735	705	685	675	666	661	656		
16	2345	2420	7738	750	16	15	766	743	83	24	00	00	02	02	748	749	748	747	748	748	749	750	750	750	750	750	750	750	750	750	749	749	750	750	751	746	741	735	705	689	675	669	664	655		
17	0000	2420	7738	749	16	15	766	743	72	62	01	00	02	02	748	748	748	746	747	747	749	749	749	749	749	748	748	748	748	748	749	749	749	750	750	744	741	735	712	683	673	667	661	654		
17	0015	2420	7738	749	16	15	766	743	72	62	01	00	02	02	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	751	751	751	752	749	746	742	737	720	687	675	668	662	657		
17	0030	2420	7738	749	16	15	766	743	72	62	01	00	02	02	748	748	748	748	747	747	747	747	748	748	748	748	748	748	748	747	747	747	748	748	749	745	741	734	715	687	677	668	662	657		
17	0100	2420	7738	749	16	16	760	740	72	62	00	00	02	02	749	749	749	48	749	749	749	748	748	748	748	750	750	750	750	751	751	751	751	751	748	748	743	735	703	687	676	665	661	656		
17	0115	2420	7738	748	16	16	760	740	72	62	00	00	02	02	749	749	749	749	748	749	749	749	749	749	749	749	749	749	749	749	750	750	750	749	748	747	745	736	700	685	672	667	660	656		
17	0130	2420	7738	750	16	16	760	740	72	62	00	00	02	02	749	749	748	747	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	748	746	743	732	699	684	670	665	660	655	653	
17	0145	2420	7738	750	16	14	762	691	00	00	00	00	02	02	747	746	744	744	743	743	744	745	746	747	747	747	747	747	747	747	747	747	747	747	744	743	740	730	694	678	667	661	656	652	650	
17	0200	2420	7738	750	16	14	762	691	00	00	00	00	02	02	748	748	748	744	747	747	746	747	748	748	748	748	748	748	748	748	747	747	747	747	747	745	739	729	695	680	670	664	658	654	652	
17	0300	2420	7738	750	12	15	766	740	00	00	00	00	03	02	749	749	749	747	747	747	748	748	748	748	748	749	749	749	749	749	749	749	749	749	748	744	739	724	693	677	667	660	657	652	651	
17	0330	2420	7738	750	12	14	763	741	00	00	00	00	03	02	750	750	749	749	749	749	749	750	750	751	751	751	751	751	752	752	752	752	752	752	750	749	740	725	692	680	670	664	660	657	654	
17	0345	2420	7738	750	12	15	766	740	00	00	00	00	03	02	750	750	749	747	747	747	748	749	749	749	749	749	749	749	749	749	749	749	749	749	748	745	735	720	692	677	658	661	657	653	650	
17	0400	2420	7738	750	12	14	763	741	00	00	00	00	03	02	749	749	748	745	746	746	747	748	748	749	749	749	749	749	749	749	749	749	749	749	748	743	737	719	692	682	670	662	657	653	651	
17	0415	2420	7738	750	12	14	763	741	00	00	00	00	03	02	744	745	745	743	743	743	743	744	744	745	746	746	746	746	746	745	746	745	747	748	748	742	733	718	698	688	663	658	653	651	649	
17	0430	2420	7738	750	12	14	763	741	00	00	00	00	03	02	744	745	745	742	742	742	742	743	743	743	744	745	745	746	747	747	746	747	747	747	745	741	730	713	687	670	663	658	653	650	647	644
17	0445	2420	7738	750	13	13	763	741	00	00	00	00	03	02	747	747	747	742	742	742	742	743	744	744	744	744	744	744	746	746	746	746	747	747	747	739	730	710	685	670	663	659	653	650	648	
17	0500	2420	7738	750	13	13	763	741	0	0	0	0	03	02	747	747	746	746	746	747	748	749	749	749	749	750	750	750	750	750	750	750	750	750	749	740	725	707	683	672	665	660	654	652	650	646
17	0515	2420	7738	744	13	13	763	741	0	0	0	0	03	02	747	747	747	746	746	747	747	747	748	748	749	749	749	749	749	749	749	749	749	749	746	737	723	698	680	671	665	659	655	652	651	
17	0530	2420	7738	750	13	13	763	741	0	0	0	0	03	02	743	743	744	743	743	743	745	746	747	747	747	747	748	748	747	748	748	748	748	748	746	738	723	696	679	671	665	660	656	653		
17	0545	2420	7738	740	13	14	752	740	31	31	0	0	02	02	742	741	741	740	741	742	743	743	743	744	744	745	745	745	745	745	746	746	746	746	742	732	715	695	675	667	662	657	654	651		
17	0600	2420	7738	748	13	14	752	740	31	31	0	0	02	02	741	742	742	741	741	742	743	744	743	744	745	745	745	745	745	745	745	746	746	746	743	734	718	697	677	669	663	659	654	651	650	
17	0615	2420	7738	749	13	14	752	740	31	31	0	0	02	02	743	743	743	743	743	744	746	746	746	747	747	747	748	748	747	747	747	747	747	748	743	733	717	695	677	672	663	659	656	652	651	

DAY	TIME GMT	POSITION		SURF WATER TEMP	WIND		AIR TEMPERATURE		CLOUDS				SEA	TEMPERATURES AT DEPTH																										
		LATITUDE	LONGITUDE		DIRECTION (10's)	SPEED	DRY BULB (0.1°F)	WET BULB (0.1°F)	PRESENT WEATHER	LOW AMOUNT	LOW TYPE	MIDDLE AMOUNT	MIDDLE TYPE	HIGH AMOUNT	HIGH TYPE	PERIOD	HEIGHT	000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
	HOUR	MINUTES	DEGREES	MINUTES	DEGREES	MINUTES	KNOTS																																									
17	0630	2420	7738	746	13	14	752	740	31	31	0	0	02	02	743	743	744	743	743	744	746	748	747	747	748	748	748	748	748	748	748	748	748	748	744	733	714	693	677	670	664	659	656	652	651			
17	0645	2420	7738	746	13	12	752	740	87	28	0	0	02	02	740	740	740	740	740	740	741	742	741	741	742	742	743	743	743	743	743	743	743	741	731	712	692	673	668	662	657	653	650	648			
17	0700	2420	7738	746	13	12	752	740	87	28	0	0	02	02	743	743	743	743	743	744	745	746	747	746	746	747	747	747	747	747	747	747	747	743	733	713	696	677	671	663	659	656	652	650			
17	0715	2420	7738	748	13	12	752	740	87	28	0	0	02	02	743	743	743	743	744	745	746	747	747	747	747	747	748	748	748	748	748	749	749	749	745	733	719	695	678	669	662	658	655	652	650			
17	0730	2420	7738	746	13	12	752	740	87	28	0	0	02	02	740	740	740	740	740	741	742	743	743	743	743	743	744	744	744	744	744	744	745	745	741	732	719	698	677	668	660	656	653	650	648		
17	0745	2420	7738	746	13	11	752	740	86	28	0	0	02	02	742	742	742	742	742	743	745	746	746	746	746	746	747	747	747	747	747	748	748	748	743	733	721	697	678	669	663	657	653	651	649		
17	0800	2420	7738	746	13	11	752	740	86	28	0	0	02	02	743	743	743	742	744	745	746	747	748	747	747	747	747	748	748	748	748	748	748	748	743	734	722	697	679	669	663	659	656	652	650		
17	0815	2420	7738	746	13	11	752	740	86	28	0	0	02	02	743	743	744	744	744	746	747	748	748	748	748	748	748	749	749	749	749	749	747	739	725	703	680	669	664	660	656	653	651				
17	0830	2420	7738	745	13	11	752	740	86	28	0	0	02	02	743	743	743	743	743	745	746	747	747	747	747	747	747	748	748	748	748	749	749	749	747	739	727	703	679	668	663	659	655	652	650		
17	0845	2420	7738	746	14	10	758	740	81	21	00	00	02	02	743	744	744	744	745	747	748	748	748	748	748	748	748	748	748	748	748	748	749	749	749	746	736	720	697	674	667	662	658	654	651	649	
17	0900	2420	7738	745	14	10	758	740	81	21	00	00	02	02	742	742	742	742	744	746	746	747	747	747	747	747	749	748	748	748	748	748	748	749	748	738	722	699	678	669	662	657	657	651	649		
17	0915	2420	7738	745	14	10	758	740	81	21	00	00	02	02	748	748	748	748	748	748	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	792	730	706	681	670	662	659	653	650	648		
17	0930	2420	7738	745	14	10	758	740	81	21	00	00	02	02	749	748	748	748	748	748	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	744	732	711	683	670	666	660	653	650	648		
17	0945	2420	7738	745	15	10	758	740	81	21	00	00	02	02	748	748	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	746	734	714	685	670	665	660	653	650	646		
17	1000	2420	7738	745	15	10	758	740	81	21	00	00	02	02	749	748	748	748	748	748	749	750	750	750	750	750	750	750	750	750	751	751	751	751	749	749	739	721	691	672	667	661	654	651	648		
17	1015	2420	7738	745	15	10	758	740	81	21	00	00	02	02	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	751	751	751	751	751	750	741	722	701	673	663	661	654	651	649		
17	1030	2420	7738	745	15	10	758	740	81	21	00	00	02	02	749	749	749	749	749	749	749	749	749	749	750	750	750	750	750	750	751	751	751	750	749	749	741	725	707	676	667	659	655	652	649		
17	1045	2420	7738	745	16	10	752	740	73	62	01	00	02	02	749	749	749	749	749	749	749	749	749	749	749	750	749	750	750	750	750	750	750	751	751	750	750	749	741	726	707	676	669	661	655	652	649	
17	1115	2420	7738	746	16	10	752	740	73	62	01	00	02	02	749	749	749	749	749	749	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	749	746	732	722	681	672	666	660	652	650	
17	1130	2420	7738	738	16	10	752	740	73	62	01	00	02	02	749	749	749	749	749	749	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	749	747	735	723	685	671	666	660	654		
17	1145	2420	7738	738	14	15	752	740	86	28	00	00	03	02	749	749	749	749	749	749	749	749	749	749	749	750	750	750	750	750	750	751	751	751	751	751	750	748	736	724	690	675	666	660	653		
17	1200	2420	7738	736	14	75	752	740	86	28	00	00	03	02	748	748	748	748	748	748	748	748	748	748	749	750	750	750	750	750	750	750	750	750	750	750	750	748	738	729	703	676	667	660	654		
17	1215	2420	7738	734	14	15	752	740	86	28	00	00	03	02	747	747	747	747	747	747	747	747	747	748	748	748	748	748	748	748	748	748	748	748	749	749	748	748	742	729	711	675	667	661	654	650	
17	1230	2420	7738	747	14	15	752	740	86	28	00	00	03	02	748	748	748	748	748	748	748	748	748	748	749	749	749	749	750	751	751	751	751	751	751	749	743	731	713	678	666						
17	1245	2420	7738	746	14	17	800	760	86	23	00	12	03	02	746	747	747	747	747	747	747	747	747	747	747	748	748	748	748	748	748	748	749	748	748	748	748	747	740	731	720	678	668	660	653	650	
17	1300	2420	7738	746	14	17	800	760	86	23	00	12	03	02	745	746	746	746	746	746	745	745	745	745	746	747	748	748	748	748	748	748	748	748	748	748	748	748	740	729	709	686	667	659	652		
17	1315	2420	7738	745	14	17	800	760	86	23	00	12	03	02	745	745	745	745	745	745	744	744	745	746	747	748	748	748	748	748	748	748	748	748	748	748	748	748	743	731	711	677	665	659	653		
17	1330	2420	7738	745	14	17	800	760	86	23	00	12	03	02	747	748	748	748	748	748	748	748	748	748	748	749	749	749	749	750	750	750	750	750	750	750	745	732	715	685	670	664	656				
17	1345	2420	7738	745	16	18	800	755	04	22	00	12	03	02	747	748	748	748	748	748	747	747	748	748	749	749	749	749	749	749	749	750	750	750	750	750	749	745	730	700	683	670	661	655				
17	1400	2420	7738	743	16	78	800	755	04	22	00	12	03	02	748	748	748	748	748	748	748	748	748	749	749	749	749	749	749	749	750	750	750	749	750	750	748	743	732	710	682	670	665	656				
17	1430	2420	7738	745	16	18	800	755	04	22	00	12	03	02	748	748	748	748	748	748	748	748	749	749	749	749	749	749	750	750	750	750	750	750	750	750	749	743	734	710	685	668	665	656	650		
17	1500	2420	7738	750	15	20	766	736	06	22	00	15	04	03	749	749	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	746	734	705	680	670	665	659	650	
17	1515	2420	7738	749	15	20	766	736	06	22	00	15	04	03	749	749	749	749	749	749	749	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	741	730	708	680	670	664	658	650	
17	1530	2420	7738	749	15	20	766	736	06	22	33	15	04	03	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	749	740	730	706	680	669	661	656	650	
17	1545	2420	7738	749	15	20	766	736	06	22	00	15	04	03	746	746	746	746	746	746	747	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	746	734	730	700	675	667	661	654	650		
17	1600	2420	7738	750	15	20	791	750	06	22	00	15	05	03	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	745	735	725	704	680	669	665	658	650	
17	1615	2420	7738	750	15	20	791	750	06	22	00	15	05	03	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	744	735	722	705	680	667				
17	1630	2420	7738	750	15	20	791	750	06	22	00	15	05	03	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	748	744	736	728	700	675	668	664	657	650	
17	1645	2420	7738	754	14	19	780	738	06	22	00	15	05	03	748	748	748	748	748	748	748	749	749	749	749	749	749	749	750	750	750	750	750	750	750	749	744	735	725	700	675	667	662	655	650		
17	1700	2420	7738	755	14	19	780	738	06	22	00	15	05	03	748	748	748	748	748	748	748	749	749	749	749	749	749	749	750	750	750	750	750	750	750	741	735	724	697	670	665	660	654	650			

BATHYTHERMOGRAPH DATA

TONGUE OF THE OCEAN

MARCH 1960

DAY	TIME GMT HOUR	TIME GMT MINUTES	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (10's)	WIND SPEED (knots)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS TYPE	CLOUDS AMOUNT	CLOUDS LOW TYPE	CLOUDS LOW AMOUNT	CLOUDS MIDDLE TYPE	CLOUDS MIDDLE AMOUNT	CLOUDS HIGH TYPE	CLOUDS HIGH AMOUNT	SEA HEIGHT (feet)	SEA PERIOD (seconds)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
17	1715	2420	7738	754	14	19	780	738	06	22	00	15	05	03	749	749	749	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	749	742	734	713	688	672	667	660	655	648			
17	1730	2420	7738	746	14	19	780	738	06	22	00	15	05	03	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	749	749	749	749	749	749	745	741	733	710	686	668	665	658	653	649			
17	1745	2420	7738	755	14	19	780	739	05	22	14	00	05	03	750	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	750	750	750	750	750	750	746	740	734	710	690	670	664	660	658	649		
17	1800	2420	7738	755	14	19	780	739	05	22	14	00	05	03	749	749	749	748	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	746	739	732	710	688	669	664	659	654	650			
17	1815	2420	7738	758	14	19	780	739	05	22	14	00	05	03	749	749	749	748	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	745	739	731	709	688	670	665	660	654	650			
17	1830	2420	7738	758	14	19	780	739	05	22	14	00	05	03	749	749	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	744	740	731	705	685	670	664	659	655	649			
17	1845	2420	7738	765	14	18	770	739	05	22	14	00	05	03	750	750	749	749	749	749	749	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	744	738	730	708	687	671	665	660	654	650			
17	1900	2420	7738	762	14	18	770	739	05	22	14	00	05	03	750	749	749	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	746	743	738	728	700	683	669	665	657	653	647		
17	1915	2420	7738	764	14	18	770	739	05	22	14	00	05	03	750	749	747	745	746	748	748	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	746	743	738	726	700	685	668	662	656	651	647		
17	1930	2420	7738	764	14	18	770	739	05	22	14	00	05	03	750	749	748	745	744	746	748	748	748	748	748	748	748	749	749	749	749	749	749	749	749	749	747	744	737	724	700	681	670	662	658	651	648		
17	1945	2420	7738	760	14	18	766	738	05	22	14	00	05	03	750	749	748	746	746	747	748	748	748	748	748	748	748	748	749	749	749	749	749	749	749	749	747	744	737	725	696	681	670	662	658	652	649		
17	2000	2420	7738	761	14	18	766	738	05	22	14	00	05	03	749	749	748	747	745	746	746	746	746	746	746	747	747	747	747	748	748	748	748	748	748	748	745	742	735	720	697	682	668	661	655	650	647		
17	2015	2420	7738		14	18	766	738	05	22	14	00	05	03	750	749	748	747	747	748	748	748	748	748	749	749	749	750	750	750	750	750	750	750	750	748	742	736	725	697	680	668	661	656	651	648			
17	2030	2420	7738	765	14	18	766	738	05	22	14	00	05	03	748	748	747	745	746	747	747	747	747	747	747	747	747	748	748	748	748	748	748	748	748	748	745	741	736	728	700	679	669	661	656	651	648		
17	2045	2420	7738	765	14	17	790	752	05	22	14	00	00	00	752	750	749	748	748	749	749	749	749	749	749	749	749	749	749	749	749	750	751	751	750	748	744	738	730	700	682	670	664	659	653	650			
17	2100	2420	7738		14	17	790	752	05	22	14	00	05	03	748	748	747	744	745	745	746	746	747	747	747	748	748	748	748	748	748	748	748	748	748	746	742	738	730	705	685	668	662	658	651	650			
17	2115	2420	7738	757	14	17	790	752	05	22	14	00	05	03	750	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	748	744	741	733	715	690	675	667	660	655	650			
17	2130	2420	7738	764	14	17	790	752	05	22	14	00	05	03	750	749	747	746	746	748	748	748	748	748	748	748	748	748	748	748	749	749	749	749	747	744	740	734	718	693	675	666	660	655	650				
17	2145	2420	7738	760	14	17	781	750	81	21	00	00	04	02	750	750	750	749	749	749	749	749	749	749	749	750	750	750	750	750	750	750	750	750	749	745	740	735	728	694	677	666	660	655	650				
17	2300	2420	7738	755	14	16	773	740	81	21	00	00	04	02	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	748	744	741	733	717	690	674	665	660	655				
17	2315	2420	7738	752	14	16	773	740	81	21	00	00	04	02	750	750	750	750	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	749	746	740	733	727	695	674	665	661	656			
17	2330	2420	7738	751	14	16	773	740	81	21	00	00	04	02	750	750	750	750	750	750	750	750	750	750	750	751	751	751	751	751	751	751	751	751	751	750	746	742	739	730	695	680	670	665	660				
17	2345	2420	7738	750	14	16	773	740	81	21	00	00	04	02	749	749	749	749	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	749	748	743	741	739	731	700	675	668	661	657				
18	0000	2420	7738	750	14	16	760	740	81	21	0	0	02	02	749	749	749	749	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	749	748	746	741	740	730	710	678	665	660	655				
18	0015	2420	7738	749	14	16	760	740	81	21	0	0	02	02	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	748	745	740	735	714	680	669	664	659				
18	0030	2420	7738	749	14	16	760	740	81	21	0	0	02	02	750	750	750	750	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	749	748	746	741	734	720	685	670	665				
18	0045	2420	7738	748	14	16	760	740	81	21	0	0	02	02	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	749	748	745	742	739	720	685	670	663				
18	0100	2420	7738	748	15	22	760	740	0	0	0	0	03	02	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	749	746	744	740	720	685	670	664				
18	0115	2420	7738	748	15	22	760	740	0	0	0	0	03	02	747	749	749	749	747	746	746	746	748	749	749	749	749	749	749	749	749	749	749	749	749	749	974	774	173	973	772	769	67	66	466				
18	0130	2420	7738	748	15	22	760	740	0	0	0	0	03	02	749	749	749	749	749	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	748	743	740	738	725	693	672	665	660			
18	0145	2420	7738	748	15	22	760	740	0	0	0	0	03	02	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	750	749	748	743	740	736	727	693	673	663	660			
18	0200	2420	7738	748	14	20	760	744	0	0	0	0	03	02	748	748	748	748	748	748	748	748	748	748	748	748	748	749	749	749	749	749	749	749	749	749	749	746	742	739	735	726	692	673	665	658			
18	0215	2420	7738	748	14	20	760	744	0	0	0	0	03	02	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	750	750	750	750	750	750	750	748	742	740	736	724	691	677	668	656				
18	0230	2420	7738	748	14	20	760	744	0	0	0	0	03	02	741	741	741	741	742	742	742	742	743	744	745	745	745	746	747	747	748	748	748	748	748	746	742	739	736	725	717	683	669	662	652				
18	0245	2420	7738	749	14	20	760	744	0	0	0	0	03	02	741	741	742	743	744	744	744	744	744	745	745	745	745	745	745	745	745	745	745	745	745	745	742	740	738	727	717	679	668	660	655				
18	0300	2420	7738	750	14	20	760	746	0	0	0	0	04	02	748	748	748	745	745	745	746	746	747	747	748	748	749	749	749	749	749	749	749	749	749	747	742	739	739	728	716	682	670	665	655				
18	0315	2420	7738	750	14	20	760	746	0	0	0	0	04	02	745	746	747	748	749	749	748	748	749	749	749	749	751	751	751	750	750	750	750	750	750	749	748	745	738	738	715	682	671	664	658	652			
18	0330	2420	7738	750	14	20	760	746	0	0	0	0	04	02	748	748	748	749	749	749	749	749	749	749	749	750	751	751	751	752	752	752	752	751	751	750	749	748	743	741	729	716	682	670	664	659			
18	0345	2420	7738	750	16	23	778	744	8	2	0	0	04	02	750	748	748	748	748	748	748	748	749	749	749	749	750	751	751	751	751	750	750	750	750	750	750	747	744	742	724	719	687	672	663	658			
18	0400	2420	7738	749	16	23	778	744	8	2	0	0	04	02	748	748	748	748	748	748	748	748	748	748	749	749	750	750	750	750	750	750	750	750	750	750	750	748	746	742	727	706	682	671	663	659	655		

DAY	TIME GMT HOUR	TIME GMT MINUTES	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (DEG TRUE)	WIND SPEED (KNOTS)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS TYPE LOW	CLOUDS TYPE MIDDLE	CLOUDS TYPE HIGH	CLOUDS AMOUNT	CLOUDS FOG, ICE (SYMBOL)	SEA HEIGHT (FEET)	SEA PERIOD (SECONDS)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	730'	760'	800'	840'	880'
18	0415		2420	7738	749	16	23	778	744	8	2	0	0		04	02	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	746	741	739	719	700	680	669	664	659	
18	0445		2420	7738	749	16	22	778	754	84	25	0	0		04	02	742	743	744	744	744	744	745	745	745	745	744	745	745	745	745	745	745	745	745	745	745	745	742	744				666	662	655	
18	0500		2420	7738	748	16	22	778	754	84	25	0	0		04	02	748	748	749	749	750	750	750	751	751	750	750	750	750	750	750	750	750	750	750	750	750	750	744	745	734	725	696	677	672	665	660	
18	0515		2420	7738	748	16	22	778	754	84	25	0	0		04	02	748	748	748	748	748	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	748	748	743	742	736	714	691	672	669	661		
18	0530		2420	7738	749	16	22	778	754	84	25	0	0		04	02	749	749	749	749	749	749	749	749	750	750	749	749	749	749	749	749	749	749	749	750	750	749	743	742	733	713	693	675	670	663		
18	0545		2420	7738	749	17	18	777	757	86	24	00	12		04	03	748	748	748	748	748	749	749	749	749	748	748	748	748	748	748	748	748	748	748	748	748	747	739	737	718	701	685	671	664	659		
18	0600		2420	7738	749	17	18	777	757	86	24	00	12		04	03	748	748	748	748	748	749	749	750	750	750	749	749	749	749	749	749	749	749	749	749	749	749	740	738	719	705	689	671	667	660		
18	0615		2420	7738	748	17	18	777	757	86	24	00	12		04	03	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	768	739	738	717	705	689	671	666	660	
18	0630		2420	7738	748	17	18	777	757	86	24	00	12		04	03	745	745	745	746	746	747	747	747	748	748	749	748	748	748	747	747	747	747	747	747	747	747	746	737	735	713	701	684	668	664	657	
18	0645		2420	7738	748	17	16	762	750	85	22	00	12		04	03	748	748	748	748	748	748	748	748	748	748	747	747	747	747	747	747	747	747	747	747	747	747	748	736	732	711	692	680	670	660	658	654
18	0700		2420	7738	748	17	16	762	750	85	22	00	12		04	03	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	747	749	737	733	712	692	678	669	662	667	654
18	0715		2420	7738	748	17	16	762	750	85	22	00	12		04	03	748	748	748	748	748	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	750	749	737	737	712	695	681	671	666	660	
18	0915		2420	7738	748	17	17	768	753	16	22	00	93		04	03	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	751	751	751	751	751	750	739	737	726	699	685	673	666	661	
18	1200		2420	7738	750	16	16	764	751	78	61	00	00		04	03	750	750	750	751	751	751	750	750	750	751	752	752	752	752	752	752	752	752	752	752	752	752	752	750	746	737	721	706	684	672	663	
18	1325		2420	7738	754	16	17	772	750	36	00	87	11		04	03	750	750	750	750	750	750	750	750	749	749	749	749	749	750	750	751	751	751	751	751	752	752	750	750	749	746	731	704	676			
18	1500		2420	7738	760	16	15	781	753	06	00	00	68		04	03	749	749	749	749	749	748	748	748	747	747	747	747	748	748	749	749	749	749	749	750	750	751	750	749	748	746	745	733	699	678		
18	1515		2420	7738	760	16	15	781	753	06	00	00	68		04	03	748	748	748	748	748	747	745	745	744	744	744	745	746	747	748	748	748	748	748	748	750	750	752	751	751	751	748	744	735	699	679		
18	1530		2420	7738	760	16	15	781	753	06	00	00	68		04	03	748	748	748	748	748	748	749	749	750	750	750	751	751	751	750	750	750	750	750	750	750	752	750	750	750	748	742	730	705			
18	1545		2420	7738	760	24	27	791	762	86	25	42	11		04	03	748	748	748	747	747	747	747	747	748	748	749	749	749	750	750	748	748	749	749	750	750	751	752	751	750	746	727	708	688	672		
18	1615		2420	7738	755	24	27	791	762	86	25	42	11		04	03	750	750	750	751	751	751	751	751	750	750	750	750	750	750	750	750	750	750	750	750	750	751	752	752	751	749	743	729	707	686	671	665
18	1630		2420	7738	754	24	27	791	762	86	25	42	11		04	03	750	750	750	750	750	750	751	751	752	752	752	752	750	750	750	750	750	750	750	750	751	752	752	753	753	746	735	726	708	685	675	667
18	1645		2436	7738	755	24	20	790	751	87	24	00	93		04	03	748	748	748	748	748	749	749	749	752	755	755	755	755	755	750	752	752	752	752	752	752	742	738	733	728	704	697	683	671	665	658	651
18	1715		2438	7738	759	24	20	790	751	87	24	00	93		04	03	747	747	747	747	747	747	746	746	746	746	746	746	746	746	746	746	746	746	746	745	744	743	750	749	740	742	742	717	700	685	670	
18	1745		2440	7738	757	24	27	800	750	87	23	00	92		04	03	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	748	749	749	749	749	750	750	755	755	755	755	748	730	685	668	662	
18	1815		2441	7737	760	24	27	800	750	87	23	00	92		04	03	748	748	748	748	748	748	748	748	748	748	748	748	748	748	749	749	749	749	749	750	750	753	753	753	753	753	733	698	672	670	669	657
18	1845		2443	7737	765	24	22	820	758	87	23	00	92		04	03	748	748	748	748	748	748	749	749	749	750	750	750	749	750	750	751	751	752	752	752	752	752	751	750	735	676	669	662		
18	1915		2445	7737	760	24	22	820	758	87	23	00	92		04	03	750	750	750	750	750	750	750	750	750	750	750	751	751	752	752	753	753	753	755	755	750	750	750	749	748	746	676	666	661			
18	1930		2446	7737	760	24	22	820	758	87	23	00	92		04	03	750	750	750	749	749	749	749	750	750	750	750	749	749	749	749	749	750	750	750	750	752	754	753	752	752	751	740	675	668	663		
18	1945		2446	7737	755	20	20	790	752	17	22	00	94		03	03	748	748	748	748	748	748	748	748	749	749	748	748	748	748	748	749	748	749	749	749	750	751	752	753	752	752	751	744	693	676	666	659	654
18	2000		2446	7737	755	20	20	790	752	17	22	00	94		03	03	750	750	750	750	750	749	750	750	750	750	749	749	749	749	749	749	750	751	752	752	752	753	751	752	752	751	743	735	717	679	670	
18	2015		2446	7737	756	20	20	790	752	17	22	00	94		03	03	748	748	749	750	750	750	750	750	750	750	750	751	751	749	749	749	750	750	751	751	752	751	750	748	748	733	715	699	683	671		
18	2030		2446	7737	758	20	20	790	752	17	22	00	94		03	03	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	750	750	750	751	750	758	758	757	753	750	722	710	690	678	
18	2045		2446	7737	755	21	21	820	750	88	24	00	2		03	03	750	750	749	749	749	750	750	749	749	749	749	750	750	750	750	750	750	750	750	751	751	750	750	751	747	741	718	707	683	669	667	662
18	2100		2446	7737	756	21	21	820	750	88	24	00	2		03	03	760	760	760	760	760	760	760	760	760	760	758	758	758	758	758	758	758	758	758	758	758	748	748	748	744	734	716	701	670	668	663	657
18	2115		2447	7737	757	21	21	820	750	88	24	00	2		03	03	757	747	747	747	747	747	747	747	747	747	748	748	750	750	750	750	750	750	750	750	750	749	749	749	746	735	710	699	688	670	666	
18	2130		2449	7738	758	21	21	820	750	88	24	00	2		03	03	758	745	745	745	745	745	745	745	747	745	746	747	747	747	748	748	748	748	748	748	748	748	750	752	752	752	750	748	718	688		
18	2145		2450	7739	759	23	16	810	760	88	23	00	22		02	02	759	747	747	747	747	747	747	747	748	748	749	749	749	749	750	750	750	750	750	750	750	749	751	752	752	752	748	738	708	688	678	
18	2200		2452	7740	754	23	16	810	760	88	23	00	22		02	02	740	742	742	748	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	748	748	748	743	733	708	685	673	662	658
18	2215		2453	7741	756	23	16	810	760	88	23	00	22		02	02	750	750	751	751	751	751	748	748	748	748	748	748	748	748	748	750	750	750	750	750	750	751	749	750	752	743	735	716	686	672	666	663
18	2230		2455	7742	755	23	16	810	760	88	23	00	22		02	02	748	748	748	748	748	748	748	748	745	745	745	745	745	745	745	745	745	745	748	748	748	750	751	750	746	735	713	685	673	666		

BATHYTHERMOGRAPH DATA
TONGUE OF THE OCEAN
MARCH 1960

DAY	TIME GMT HOUR	TIME GMT MINUTES	POSITION LATITUDE DEGREES	POSITION LATITUDE MINUTES	POSITION LONGITUDE DEGREES	POSITION LONGITUDE MINUTES	SURF WATER TEMP	WIND DIRECTION (TENS)	WIND SPEED (KNOTS)	AIR TEMPERATURE DRY BULB (0.1°F)	AIR TEMPERATURE WET BULB (0.1°F)	CLOUDS PRES. (TENS)	CLOUDS LOW TYPE	CLOUDS LOW AMOUNT	CLOUDS MIDDLE TYPE	CLOUDS MIDDLE AMOUNT	CLOUDS HIGH TYPE	CLOUDS HIGH AMOUNT	SEA HEIGHT (FEET)	SEA PERIOD (SECONDS)	TEMPERATURES AT DEPTH 000'	020'	040'	060'	080'	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'	340'	360'	400'	440'	480'	520'	560'	600'	640'	680'	720'	760'	800'	840'	880'
18	2245		2455	7742	755	18	14	788	753	88	22	00	82	03	02	752	752	752	752	752	752	752	748	748	748	748	748	748	748	748	748	748	748	748	750	750	752	752	749	746	730	710	689	673	668				
18	2300		2455	7742	750	18	14	788	753	88	22	00	82	03	02	750	750	750	750	750	750	749	748	748	748	748	748	748	748	748	748	748	748	748	749	750	751	752	750	746	730	708	688	673	668				
18	2315		2455	7742	752	18	14	788	753	88	22	00	82	03	02	752	752	752	752	752	752	750	748	748	748	748	748	748	748	748	748	749	749	749	749	750	750	748	748	744	726	708	687	676	667				
18	2330		2455	7742	752	18	14	788	753	88	22	00	82	03	02	752	752	752	752	752	752	752	748	748	748	748	748	748	748	748	748	748	748	748	748	752	752	752	751	745	728	708	688	678	668	664			
18	2345		2455	7742	752	18	14	788	753	88	22	00	82	03	02	750	750	750	750	750	750	750	748	746	746	746	746	746	746	746	746	746	746	746	746	750													
19	0000		2455	7742	752	18	14	788	753	88	22	00	82	03	02	752	752	752	752	752	752	752	751	748	748	748	748	748	748	748	748	748	749	752	752	752	752													
19	0015		2455	7742	752	18	14	788	753	88	22	00	82	03	02	752	752	752	752	752	752	752	752	748	748	748	748	748	749	749	749	749	749	749	749	750	753	748	747	743	724	702	688	674	667				
19	0030		2455	7742	751	18	14	788	753	88	22	00	82	00	02	752	752	752	752	752	752	752	752	748	748	748	748	748	748	748	749	749	749	749	750	749	749	747	750	726	705	689	675	668					
19	0045		2455	7742	751	18	14	788	753	88	22	00	82	03	02	751	751	751	751	751	751	751	750	748	748	748	748	748	748	748	748	748	748	748	750	750	749	748	741	725	705	690	672	666	663				
19	0100		2455	7742	751	18	14	788	753	88	22	00	82	03	02	752	752	752	752	752	752	752	752	748	748	748	748	748	748	749	750	750	750	750	751	751	752	750	748	745	728	705	688						
19	0115		2457	7745	749	23	16	771	747	88	26	00	72	03	03	750	750	750	752	752	752	752	752	750	750	750	750	750	750	750	750	750	750	750	750	752	752	753	751	745	732	709	690	679	668	660	655		
19	0200		2502	7751	749	23	16	771	747	88	26	00	72	03	03	746	747	748	748	748	749	749	749	749	749	749	749	749	749	749	750	748	748	748	748	748	748	748	748										
19	0230		2506	7753	749	23	16	771	747	88	26	00	72	03	03	743	743	745	745	746	747	749	749	749	749	749	749	749	749	749	749	750	750	750	748	748	748	747	743	741	741								
19	0300		2506	7753	748	27	27	722	677	85	25	00	00	06	05	747	749	749	749	749	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	749	749	749	747	743	741	733	710	690	680				
19	0415		2505	7748	748	27	25	720	675	88	25	00	73	06	05	754	754	754	754	754	753	753	753	753	753	752	751	751	751	750	749	749	748	747	745	745	748	749	748	733	715								
19	0430		2505	7747	745	27	25	720	675	88	25	00	73	06	05	757	757	756	756	756	756	756	755	755	755	755	755	754	754	753	753	752	751	750	750	750	750	751	748	73N	720	700	680	666					
19	0445		2504	7746	743	27	22	716	670	88	25	00	73	05	04	755	755	755	755	755	755	755	755	755	754	754	753	753	753	752	751	750	749	749	748	748	748	748	747	734	717	703	682	666	661				
19	0500		2504	7745	743	27	22	716	670	88	25	00	73	05	04	755	755	755	755	755	755	755	755	755	755	755	753	752	751	751	750	749	748	748	748	748	748	743	735	719	695	677							
19	0515		2504	7744	740	27	22	716	670	88	25	00	73	05	04	762	762	762	762	762	760	759	757	756	755	755	755	755	754	753	753	752	752	752	752	752	752	751	745	739	728	707	688	677	671				
19	0530		2504	7744	740	27	22	716	670	88	25	00	73	05	04	756	756	756	756	756	756	750	754	753	752	752	750	749	749	748	748	748	748	749	749	749	749	748	743	734	723	709	690	675	665				
19	0545		2504	7744	745	27	27	703	651	88	26	00	84	05	04	758	758	758	758	757	757	755	754	752	752	752	750	749	749	748	748	748	748	748	748	750	750	749	748	742	724	707	688	674	666				
19	0600		2504	7744	742	27	27	703	651	88	26	00	84	05	04	756	756	756	755	754	752	751	750	749	749	749	748	748	746	745	745	746	748	749	749	749	747	745	745	735	720								
19	0615		2503	7742	742	27	27	703	651	88	26	00	84	05	04	755	755	755	755	754	753	752	751	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	748	737	726	713	693	674	665	656			
19	0630		2503	7740	740	27	27	703	651	88	26	00	84	05	04	756	756	756	756	750	750	754	753	752	752	751	750	750	750	750	750	750	750	749	749	749	749	745	740	736	730	713	688	673	664	656			
19	0645		2503	7740	740	32	25	700	659	88	26	00	84	05	04	758	758	757	756	756	756	754	753	753	753	752	752	752	752	752	752	752	752	751	750	751	750	746	742	736	726	705	688	669	662				

APPENDIX III

OCEANOGRAPHIC STATION DATA

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	06	960	22	24° 35'N	077° 34'W	1756	17

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	06	23		24 0	18 4			8	5	05	1	05	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
0000	23 83	36 51	24 85	0 000		5021 4
0000	23 83	36 51	24 85			5021 4
0010	23 83	36 50	24 85	0 031		5021 9
0010	23 83	36 50	24 85			5021 9
0020	23 76	36 52	24 88	0 062		5022 0
0020	23 76	36 52	24 88			5022 0
0030	23 71	36 57	24 94	0 093		5022 4
0030	23 71	36 57	24 94			5022 4
0050	23 71	36 58	24 94	0 154		5023 6
0050	23 71	36 58	24 94			5023 6
0075	23 73	36 63	24 97	0 229		5025 4
0075	23 73	36 63	24 97			5025 4
0100	23 78	36 68	25 00	0 305		5027 5
0100	23 78	36 68	25 00			5027 5
0150	23 76	36 79	25 09	0 454		5030 7
0150	23 76	36 79	25 09			5030 7
0190	22 75	36 78	25 37			5024 7
0200	21 83	36 73	25 60	0 589		5017 2
0250	18 71	36 53	26 28	0 697		4991 2
0250	18 71	36 53	26 28			4991 2
0300	18 04	36 46	26 40	0 786		4987 5
0300	18 04	36 46	26 40			4987 5
0400	16 80	36 25	26 54	0 955		4980 5
0500	14 87	35 97	26 77	1 109		4965 7
0500	14 87	35 97	26 77			4965 7
0600	12 26	35 61	27 03	1 241		4941 9
0600	12 26	35 61	27 03			4941 9
0800	08 09	35 20	27 44	1 440		4902 7
0800	08 09	35 20	27 44			4902 7
1000	05 35	35 03	27 68	1 575		4878 4
1000	05 35	35 03	27 68			4878 4
1200	04 60	35 01	27 75	1 679		4880 1
1200	04 60	35 01	27 75			4880 1
1500	04 18	35 00	27 79	1 822		4892 1
1500	04 18	35 00	27 79			4892 1
1750	03 74	34 98	27 82			4900 8

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	07	960	13	24° 35′N	077° 34′W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	10	23		21 1	16 9			7	2	07	1	07	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 m l/l ↓	V_f ↓
0000	23 78	36 52	24 88	0 000		5021 0
0000	23 78	36 52	24 88			5021 0
0010	23 78	36 51	24 87	0 031		5021 5
0010	23 78	36 51	24 87			5021 5
0020	23 74	36 51	24 88	0 062		5021 8
0020	23 74	36 51	24 88			5021 8
0030	23 75	36 51	24 88	0 093		5022 5
0030	23 75	36 51	24 88			5022 5
0050	23 79	36 51	24 87	0 155		5024 0
0050	23 79	36 51	24 87			5024 0
0075	23 74	36 59	24 94	0 232		5025 4
0075	23 74	36 59	24 94			5025 4
0100	23 62	36 65	25 02	0 307		5026 1
0100	23 62	36 65	25 02			5026 1
0150	23 71	36 78	25 09	0 455		5030 3
0150	23 71	36 78	25 09			5030 3
0190	23 47	36 80	25 18			5030 8
0200	22 41	36 74	25 44	0 595		5022 2
0250	18 85	36 55	26 26	0 707		4992 6
0250	18 85	36 55	26 26			4992 6
0300	18 22	36 49	26 38	0 797		4989 4
0300	18 22	36 49	26 38			4989 4
0350	17 70	36 42	26 45			4987 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	07	960	20	24° 35′N	077° 34′W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	10	23		22 2	17 3			8	2							

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ m l/l ↓	V_f ↓
0000	23 99	36 53	24 82	0 000		5022 7
0000	23 99	36 53	24 82			5022 7
0010	23 86	36 53	24 86	0 031		5022 3
0010	23 86	36 53	24 86			5022 3
0020	23 82	36 54	24 88	0 062		5022 6
0020	23 82	36 54	24 88			5022 6
0030	23 82	36 53	24 87	0 093		5023 1
0030	23 82	36 53	24 87			5023 1
0050	23 84	36 54	24 87	0 155		5024 5
0050	23 84	36 54	24 87			5024 5
0075	23 69	36 59	24 96	0 232		5025 0
0075	23 69	36 59	24 96			5025 0
0100	23 65	36 66	25 02	0 307		5026 4
0100	23 65	36 66	25 02			5026 4
0150	23 75	36 79	25 09	0 456		5030 7
0150	23 75	36 79	25 09			5030 7
0190	23 16	36 80	25 27			5028 2
0200	22 15	36 74	25 52	0 593		5020 0
0250	18 76	36 54	26 28	0 703		4991 7
0250	18 76	36 54	26 28			4991 7
0300	18 11	36 47	26 39	0 793		4988 2
0300	18 11	36 47	26 39			4988 2
0350	17 60	36 41	26 47			4986 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	08	960	02	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	11	23		21 9	18 3			8	7	10	2	11	3			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
0000	23 83	36 53	24 87	0 000		5021 4
0000	23 83	36 53	24 87			5021 4
0010	23 88	36 53	24 85	0 031		5022 4
0010	23 88	36 53	24 85			5022 4
0020	23 83	36 53	24 87	0 062		5022 6
0020	23 83	36 53	24 87			5022 6
0030	23 84	36 53	24 87	0 093		5023 3
0030	23 84	36 53	24 87			5023 3
0050	23 81	36 53	24 88	0 155		5024 2
0050	23 81	36 53	24 88			5024 2
0075	23 76	36 59	24 94	0 232		5025 6
0075	23 76	36 59	24 94			5025 6
0100	23 67	36 61	24 98	0 308		5026 4
0100	23 67	36 61	24 98			5026 4
0150	23 90	36 86	25 10	0 457		5032 1
0150	23 90	36 86	25 10			5032 1
0190	23 45	36 84	25 22			5030 7
0200	22 38	36 76	25 47	0 596		5022 1
0250	18 82	36 52	26 25	0 708		4992 2
0250	18 82	36 52	26 25			4992 2
0300	18 22	36 54	26 41	0 798		4989 6
0300	18 22	36 54	26 41			4989 6
0350	17 54	36 56	26 60			4986 0

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	08	960	08	24° 35'N	077° 34'W	1756	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	11	23		21 7	18 1			8	3	10	1	10	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	23 82	36 53	24 87	0 000		5021 3
0000	23 82	36 53	24 87			5021 3
0010	23 79	36 52	24 87	0 031		5021 7
0010	23 79	36 52	24 87			5021 7
0020	23 80	36 53	24 88	0 062		5022 4
0020	23 80	36 53	24 88			5022 4
0030	23 81	36 53	24 88	0 093		5023 1
0030	23 81	36 53	24 88			5023 1
0050	23 82	36 52	24 86	0 155		5024 3
0050	23 82	36 52	24 86			5024 3
0075	23 76	36 58	24 93	0 232		5025 5
0075	23 76	36 58	24 93			5025 5
0100	23 67	36 65	25 01	0 308		5026 5
0100	23 67	36 65	25 01			5026 5
0150	23 79	36 78	25 07	0 457		5030 9
0150	23 79	36 78	25 07			5030 9
0190	22 97	36 81	25 33			5026 6
0200	21 99	36 75	25 57	0 594		5018 7
0250	18 68	36 53	26 29	0 702		4990 9
0250	18 68	36 53	26 29			4990 9
0300	18 04	36 46	26 40	0 791		4987 5
0300	18 04	36 46	26 40			4987 5
0350	17 41	36 37	26 48			4984 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	08	960	13	24° 35′N	077° 34′W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	34	23		21 0	17 8			8	2	27	2	29	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 m l/l ↓	V_f ↓
0000	23 77	36 54	24 89	0 000		5021 0
0000	23 77	36 54	24 89			5021 0
0010	23 78	36 53	24 88	0 031		5021 6
0010	23 78	36 53	24 88			5021 6
0020	23 75	36 54	24 90	0 061		5022 0
0020	23 75	36 54	24 90			5022 0
0030	23 75	36 54	24 90	0 092		5022 6
0030	23 75	36 54	24 90			5022 6
0050	23 79	36 54	24 89	0 154		5024 1
0050	23 79	36 54	24 89			5024 1
0075	23 77	36 58	24 93	0 231		5025 6
0075	23 77	36 58	24 93			5025 6
0100	23 85	36 74	25 02	0 307		5028 3
0100	23 85	36 74	25 02			5028 3
0150	23 98	36 88	25 09	0 455		5032 9
0150	23 98	36 88	25 09			5032 9
0190	22 86	36 82	25 37			5025 7
0200	21 91	36 76	25 60	0 590		5018 0
0250	18 71	36 54	26 29	0 698		4991 3
0250	18 71	36 54	26 29			4991 3
0300	18 04	36 46	26 40	0 787		4987 5
0300	18 04	36 46	26 40			4987 5
0350	17 32	36 36	26 50			4983 1

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	08	960	19	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	05	23		20 7	17 9			2	2	10	2	20	3			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ $\Sigma \Delta D$	O_2 ml/l ↓	V_f ↓
0000	23 92	36 54	24 85	0 000		5022 2
0000	23 92	36 54	24 85			5022 2
0010	23 81	36 53	24 88	0 031		5021 9
0010	23 81	36 53	24 88			5021 9
0020	23 75	36 54	24 90	0 062		5022 0
0020	23 75	36 54	24 90			5022 0
0030	23 75	36 53	24 89	0 093		5022 6
0030	23 75	36 53	24 89			5022 6
0050	23 77	36 54	24 89	0 154		5024 0
0050	23 77	36 54	24 89			5024 0
0075	23 79	36 67	24 99	0 230		5026 1
0075	23 79	36 67	24 99			5026 1
0100	23 77	36 71	25 02	0 305		5027 6
0100	23 77	36 71	25 02			5027 6
0150	23 93	36 86	25 09	0 454		5032 4
0150	23 93	36 86	25 09			5032 4
0190	22 71	36 81	25 41			5024 4
0200	21 83	36 75	25 61	0 589		5017 3
0250	18 79	36 54	26 27	0 696		4992 0
0250	18 79	36 54	26 27			4992 0
0300	18 02	36 46	26 40	0 786		4987 3
0300	18 02	36 46	26 40			4987 3
0350	17 32	36 36	26 50			4983 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	09	960	02	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	06	23		21 2	17 3			8	5	05	1	05	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	23 77	36 53	24 89	0 000		5020 9
0000	23 77	36 53	24 89			5020 9
0010	23 78	36 54	24 89	0 031		5021 6
0020	23 78	36 54	24 89	0 061		5022 2
0020	23 78	36 54	24 89			5022 2
0030	23 76	36 55	24 91	0 092		5022 7
0050	23 74	36 57	24 93	0 153		5023 8
0050	23 74	36 57	24 93			5023 8
0075	23 78	36 65	24 98	0 229		5025 9
0100	23 84	36 73	25 02	0 305		5028 2
0100	23 84	36 73	25 02			5028 2
0150	24 02	36 90	25 09	0 453		5033 3
0150	24 02	36 90	25 09			5033 3
0180	23 96	36 90	25 11			5034 6
0190	23 76	36 89	25 16			5033 5
0200	20 90	36 67	25 81	0 583		5008 8
0205	20 03	36 61	26 00			5001 1
0215	19 42	36 58	26 14			4996 0
0225	19 23	36 56	26 17			4994 7
0250	18 69	36 53	26 29	0 686		4991 0
0250	18 69	36 53	26 29			4991 0
0300	17 88	36 44	26 42	0 774		4985 9
0300	17 88	36 44	26 42			4985 9
0350	17 23	36 35	26 51			4982 2

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	09	960	08	24° 35′N	077° 34′W	1710	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	07	23		20 7	17 3			8	4	05	2	07	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
0000	23 73	36 55	24 91	0 000		5020 7
0000	23 73	36 55	24 91			5020 7
0010	23 72	36 54	24 91	0 031		5021 2
0020	23 72	36 54	24 91	0 061		5021 8
0020	23 72	36 54	24 91			5021 8
0030	23 73	36 55	24 91	0 092		5022 5
0050	23 75	36 58	24 93	0 153		5023 9
0050	23 75	36 58	24 93			5023 9
0075	23 80	36 68	24 99	0 229		5026 2
0100	23 84	36 76	25 04	0 303		5028 3
0100	23 84	36 76	25 04			5028 3
0150	23 89	36 85	25 09	0 451		5032 0
0150	23 89	36 85	25 09			5032 0
0180	23 80	36 85	25 12			5033 1
0190	23 78	36 88	25 15			5033 6
0200	21 52	36 71	25 67	0 585		5014 5
0205	20 72	36 65	25 84			5007 5
0215	19 80	36 60	26 05			4999 5
0225	19 27	36 58	26 18			4995 2
0250	18 74	36 53	26 27	0 691		4991 5
0250	18 74	36 53	26 27			4991 5
0300	17 99	36 46	26 41	0 780		4987 1
0300	17 99	36 46	26 41			4987 1
0350	17 27	36 36	26 51			4982 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	09	960	13	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	07	23		20 9	17 4			8	5	07	2	06	3			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	23 68	36 56	24 94	0 000		5020 3
0000	23 68	36 56	24 94			5020 3
0010	23 69	36 57	24 94	0 030		5021 0
0020	23 69	36 57	24 94	0 061		5021 6
0020	23 69	36 57	24 94			5021 6
0030	23 74	36 61	24 96	0 091		5022 8
0050	23 81	36 68	24 99	0 151		5024 8
0050	23 81	36 68	24 99			5024 8
0075	23 83	36 76	25 04	0 225		5026 7
0100	23 85	36 81	25 08	0 299		5028 6
0100	23 85	36 81	25 08			5028 6
0150	23 89	36 85	25 09	0 446		5032 0
0150	23 89	36 85	25 09			5032 0
0180	23 88	36 86	25 10			5033 8
0190	23 65	36 87	25 18			5032 5
0200	21 58	36 72	25 66	0 580		5015 0
0205	20 75	36 66	25 84			5007 8
0215	19 48	36 59	26 13			4996 6
0225	19 22	36 57	26 18			4994 7
0250	18 85	36 54	26 25	0 687		4992 6
0250	18 85	36 54	26 25			4992 6
0300	18 00	36 56	26 48	0 775		4987 5
0300	18 00	36 56	26 48			4987 5
0350	17 17	36 34	26 52			4981 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	09	960	19	24° 35′N	077° 34′W	1708	17

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	09	23		23 4	19 0			8	6	09	1	09	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	Σ Δ D ▼	O_2 ml/l ▼	V_f ▼
0000	23 77	36 57	24 92	0 000		5021 1
0000	23 77	36 57	24 92			5021 1
0010	23 74	36 57	24 93	0 030		5021 4
0020	23 72	36 57	24 93	0 061		5021 9
0020	23 72	36 57	24 93			5021 9
0030	23 71	36 59	24 95	0 091		5022 4
0050	23 71	36 63	24 98	0 151		5023 8
0050	23 71	36 63	24 98			5023 8
0075	23 76	36 69	25 01	0 226		5025 9
0100	23 81	36 75	25 04	0 301		5028 0
0100	23 81	36 75	25 04			5028 0
0150	23 91	36 85	25 09	0 449		5032 2
0150	23 91	36 85	25 09			5032 2
0180	23 89	36 87	25 11			5033 9
0190	23 83	36 90	25 15			5034 1
0200	23 10	36 86	25 33	0 590		5028 5
0205	22 69	36 83	25 43			5025 2
0215	21 78	36 75	25 63			5017 8
0225	19 96	36 62	26 03			5001 7
0250	19 02	36 56	26 23	0 706		4994 2
0250	19 02	36 56	26 23			4994 2
0300	18 06	36 47	26 40	0 797		4987 8
0300	18 06	36 47	26 40			4987 8
0350	17 41	36 38	26 49			4984 1
0400	16 80	36 29	26 57	0 964		4980 7
0400	16 80	36 29	26 57			4980 7
0500	14 40	35 92	26 83	1 113		4960 5
0500	14 40	35 92	26 83			4960 5
0600	12 51	35 65	27 01	1 243		4944 8
0600	12 51	35 65	27 01			4944 8
0800	08 35	35 20	27 40	1 448		4905 9
0800	08 35	35 20	27 40			4905 9
1000	05 45	35 06	27 69	1 586		4879 9
1000	05 45	35 06	27 69			4879 9
1200	04 65	35 02	27 75	1 689		4880 8
1200	04 65	35 02	27 75			4880 8
1500	04 20	35 00	27 79	1 833		4892 4
1500	04 20	35 00	27 79			4892 4
1700	03 99	35 05	27 85			4901 6

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	10	960	01	24° 35′N	077° 34′W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	15	23		24 5	21 2			8	1	15	1	15	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 m l/l ↓	V_f ↓
0000	23 71	36 57	24 94	0 000		5020 6
0000	23 71	36 57	24 94			5020 6
0010	23 72	36 58	24 94	0 030		5021 3
0020	23 73	36 58	24 94	0 061		5022 0
0020	23 73	36 58	24 94			5022 0
0030	23 70	36 60	24 96	0 091		5022 4
0050	23 69	36 65	25 00	0 151		5023 7
0050	23 69	36 65	25 00			5023 7
0075	23 81	36 77	25 06	0 225		5026 6
0100	23 89	36 84	25 09	0 298		5029 0
0100	23 89	36 84	25 09			5029 0
0150	23 93	36 87	25 10	0 445		5032 4
0150	23 93	36 87	25 10			5032 4
0180	23 91	36 88	25 11			5034 1
0190	23 92	36 89	25 12			5034 8
0200	23 51	36 87	25 22	0 589		5032 0
0205	23 05	36 87	25 36			5028 4
0215	21 61	36 89	25 78			5016 8
0225	19 68	36 60	26 08			4999 0
0250	19 01	36 55	26 22	0 707		4994 1
0250	19 01	36 55	26 22			4994 1
0300	18 08	36 47	26 39	0 798		4988 0
0300	18 08	36 47	26 39			4988 0
0350	17 39	36 37	26 49			4983 8

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	10	960	08	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	14	23		22 2	19 7			8	3	12	2	11	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	23 64	36 59	24 97	0 000		5020 1
0000	23 64	36 59	24 97			5020 1
0010	23 65	36 59	24 97	0 030		5020 8
0020	23 67	36 59	24 96	0 060		5021 5
0020	23 67	36 59	24 96			5021 5
0030	23 69	36 63	24 99	0 090		5022 4
0050	23 72	36 70	25 03	0 150		5024 1
0050	23 72	36 70	25 03			5024 1
0075	23 78	36 76	25 06	0 223		5026 3
0100	23 83	36 80	25 07	0 297		5028 4
0100	23 83	36 80	25 07			5028 4
0150	23 92	36 86	25 09	0 444		5032 3
0150	23 92	36 86	25 09			5032 3
0180	23 88	36 86	25 10			5033 8
0190	23 88	36 87	25 11			5034 4
0200	23 60	36 87	25 20	0 589		5032 7
0205	23 36	36 87	25 27			5031 0
0215	22 67	36 81	25 42			5025 6
0225	21 02	36 68	25 79			5011 4
0250	19 07	36 56	26 21	0 708		4994 7
0250	19 07	36 56	26 21			4994 7
0300	18 14	36 48	26 39	0 799		4988 6
0300	18 14	36 48	26 39			4988 6
0350	17 50	36 39	26 48			4985 0

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	10	960	14	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	14	23		23 4	20 4			8	1	14	1	14	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	$\Sigma \Delta D$ ▼	O_2 m l/l ▼	V_f ▼
0000	23 68	36 62	24 98	0 000		5020 5
0000	23 68	36 62	24 98			5020 5
0010	23 65	36 63	25 00	0 030		5020 9
0020	23 64	36 63	25 00	0 060		5021 4
0020	23 64	36 63	25 00			5021 4
0030	23 68	36 67	25 02	0 089		5022 5
0050	23 76	36 74	25 05	0 148		5024 6
0050	23 76	36 74	25 05			5024 6
0075	23 85	36 79	25 06	0 222		5027 0
0100	23 90	36 82	25 07	0 295		5029 0
0100	23 90	36 82	25 07			5029 0
0150	23 91	36 86	25 10	0 442		5032 2
0150	23 91	36 86	25 10			5032 2
0180	23 87	36 87	25 12			5033 7
0190	23 90	36 90	25 13			5034 7
0200	23 04	36 86	25 35	0 583		5028 0
0205	22 66	36 83	25 44			5025 0
0215	22 02	36 77	25 58			5019 9
0225	20 82	36 67	25 83			5009 6
0250	15 22	36 57	27 15	0 676		4956 8
0250	15 22	36 57	27 15			4956 8
0300	18 31	36 51	26 37	0 746		4990 3
0300	18 31	36 51	26 37			4990 3
0350	17 65	36 42	26 46			4986 6

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	10	960	19	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	17	23		24 7	20 3			8	1	18	1	18	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 m l/l ↓	V_f ↓
0000		36 65				
0000		36 65				
0010		36 66				
0020	23 66	36 66	25 02			5021 7
0020	23 66	36 66	25 02			5021 7
0030	23 70	36 71	25 04			5022 8
0050	23 77	36 79	25 08			5024 8
0050	23 77	36 79	25 08			5024 8
0075	23 79	36 80	25 09			5026 5
0100	23 80	36 80	25 08			5028 1
0100	23 80	36 80	25 08			5028 1
0150	23 92	36 86	25 09			5032 3
0150	23 92	36 86	25 09			5032 3
0180	23 87	36 86	25 11			5033 7
0190	23 81	36 85	25 12			5033 8
0200	23 73	36 88	25 16			5033 8
0205	23 47	36 89	25 25			5032 0
0215	22 53	36 82	25 47			5024 5
0225	20 88	36 66	25 81			5010 1
0250	19 17	36 57	26 19			4995 7
0250	19 17	36 57	26 19			4995 7
0300	18 33	36 51	26 36			4990 5
0300	18 33	36 51	26 36			4990 5
0350	17 67	36 43	26 47			4986 8

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	11	960	01	24° 35'N	077° 34'W	1710	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	36	23		23 1	14 2			8	2	34	2	34	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
0000		36 61				
0000		36 61				
0010		36 65				
0020	23 73	36 68	25 01			5022 3
0020	23 73	36 68	25 01			5022 3
0030	23 74	36 70	25 02			5023 1
0050	23 75	36 73	25 04			5024 5
0050	23 75	36 73	25 04			5024 5
0075	23 85	36 80	25 07			5027 0
0100	23 90	36 84	25 08			5029 1
0100	23 90	36 84	25 08			5029 1
0150	23 89	36 85	25 09			5032 0
0150	23 89	36 85	25 09			5032 0
0180	23 83	36 89	25 14			5033 5
0190	23 84	36 90	25 15			5034 2
0200	23 65	36 90	25 20			5033 2
0205	23 02	36 85	25 35			5028 1
0215	20 71	36 65	25 85			5008 0
0225	19 67	36 59	26 08			4998 9
0250	18 90	36 53	26 23			4993 0
0250	18 90	36 53	26 23			4993 0
0300	18 25	36 48	26 36			4989 6
0300	18 25	36 48	26 36			4989 6
0350	17 56	36 41	26 48			4985 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	11	960	08	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	36	23		22 8	19 3			0	0	01	1	01	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	23 61	36 61	25 00	0 000		5019 9
0000	23 61	36 61	25 00			5019 9
0010	23 64	36 62	24 99	0 030		5020 8
0020	23 66	36 62	24 99	0 060		5021 5
0020	23 66	36 62	24 99			5021 5
0030	23 66	36 63	25 00	0 089		5022 2
0050	23 67	36 65	25 01	0 149		5023 5
0050	23 67	36 65	25 01			5023 5
0075	23 79	36 72	25 03	0 223		5026 3
0100	23 87	36 78	25 05	0 298		5028 6
0100	23 87	36 78	25 05			5028 6
0150	23 94	36 85	25 08	0 446		5032 4
0150	23 94	36 85	25 08			5032 4
0180	23 80	36 83	25 11			5033 0
0200	23 49	36 82	25 19	0 591		5031 6
0205	22 63	36 82	25 44			5024 7
0215	19 97	36 62	26 02			5001 2
0225	19 59	36 59	26 10			4998 2
0250	19 18	36 56	26 18	0 711		4995 7
0250	19 18	36 56	26 18			4995 7
0300	18 21	36 49	26 38	0 803		4989 3
0300	18 21	36 49	26 38			4989 3
0350	17 55	36 40	26 47			4985 5

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	11	960	14	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	01	23		24 2	21 1			8	2	09	1	10	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
0000	23 66	36 62	24 99	0 000		5020 3
0000	23 66	36 62	24 99			5020 3
0010	23 66	36 62	24 99	0 030		5020 9
0020	23 66	36 62	24 99	0 060		5021 5
0020	23 66	36 62	24 99			5021 5
0030	23 67	36 62	24 99	0 090		5022 2
0050	23 68	36 63	24 99	0 149		5023 5
0050	23 68	36 63	24 99			5023 5
0075	23 73	36 72	25 04	0 224		5025 8
0100	23 79	36 79	25 08	0 297		5028 0
0100	23 79	36 79	25 08			5028 0
0150	23 91	36 85	25 09	0 444		5032 2
0150	23 91	36 85	25 09			5032 2
0180	23 84	36 93	25 17			5033 7
0190	22 80	36 84	25 41			5025 3
0200	22 04	36 77	25 57	0 581		5019 2
0205	21 41	36 72	25 71			5013 8
0215	19 66	36 60	26 09			4998 3
0225	19 40	36 58	26 14			4996 4
0250	18 88	36 55	26 25	0 690		4992 9
0250	18 88	36 55	26 25			4992 9
0300	18 31	36 50	26 36	0 781		4990 3
0300	18 31	36 50	26 36			4990 3
0350	17 43	36 38	26 49			4984 3

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	11	960	19	24° 35'N	077° 34'W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	14	23		27 1	22 4			8	2	15	1	15	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	24 02	36 60	24 87	0 000		5023 2
0000	24 02	36 60	24 87			5023 2
0010	23 85	36 61	24 92	0 031		5022 5
0020	23 73	36 62	24 97	0 061		5022 1
0020	23 73	36 62	24 97			5022 1
0030	23 73	36 64	24 98	0 091		5022 8
0050	23 74	36 69	25 02	0 151		5024 2
0050	23 74	36 69	25 02			5024 2
0075	23 78	36 75	25 05	0 225		5026 3
0100	23 82	36 79	25 07	0 298		5028 2
0100	23 82	36 79	25 07			5028 2
0150	23 88	36 84	25 09	0 445		5031 9
0150	23 88	36 84	25 09			5031 9
0180	23 90	36 87	25 11			5034 0
0190	23 82	36 93	25 18			5034 1
0200	22 43	36 83	25 50	0 583		5022 7
0205	21 83	36 78	25 64			5017 7
0215	20 84	36 67	25 83			5009 2
0225	19 74	36 61	26 08			4999 6
0250	19 19	36 57	26 19	0 695		4995 9
0250	19 19	36 57	26 19			4995 9
0300	18 29	36 50	26 37	0 788		4990 1
0300	18 29	36 50	26 37			4990 1
0350	17 40	36 38	26 49			4984 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	12	960	02	24° 35′N	077° 34′W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	16	23		23 9	21 1			8	2	15	1	15	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
0000	23 94	36 61	24 90	0 000		5022 6
0000	23 94	36 61	24 90			5022 6
0010	23 99	36 62	24 89	0 031		5023 6
0020	24 00	36 65	24 91	0 061		5024 4
0020	24 00	36 65	24 91			5024 4
0030	23 92	36 71	24 98	0 092		5024 6
0050	23 82	36 80	25 08	0 151		5025 3
0050	23 82	36 80	25 08			5025 3
0075	23 85	36 82	25 08	0 224		5027 1
0100	23 86	36 83	25 09	0 297		5028 7
0100	23 86	36 83	25 09			5028 7
0150	23 86	36 85	25 10	0 443		5031 8
0150	23 86	36 85	25 10			5031 8
0180	23 81	36 93	25 18			5033 4
0190	23 44	36 89	25 26			5030 8
0200	21 71	36 74	25 64	0 577		5016 2
0205	20 97	36 68	25 80			5009 8
0215	19 72	36 60	26 07			4998 8
0225	19 38	36 58	26 15			4996 2
0250	18 86	36 55	26 26	0 685		4992 7
0250	18 86	36 55	26 26			4992 7
0300	18 24	36 48	26 36	0 775		4989 5
0300	18 24	36 48	26 36			4989 5
0350	17 41	36 38	26 49			4984 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	MOOR	03	12	960	08	24° 35′N	077° 34′W	1710	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	24	23		23 4	21 1			3	5	23	1	23	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 m l/l ↓	V_f ↓
0000		36 54				
0000		36 54				
0010		36 56				
0018						
0020		36 55				
0030		36 57				
0044	23 82	36 61	24 93			5024 3
0050	23 83	36 65	24 96			5024 8
0075	23 86	36 79	25 06			5027 1
0087	23 87	36 83	25 08			5028 0
0100	23 87	36 84	25 09			5028 8
0131	23 86	36 85	25 10			5030 6
0150	23 86	36 86	25 11			5031 8
0157	23 85	36 86	25 11			5032 2
0166	23 83	36 84	25 10			5032 4
0179	23 66	36 86	25 17			5031 9
0187	23 18	36 87	25 32			5028 4
0197	22 05	36 78	25 57			5019 1
0200	21 63	36 75	25 67			5015 6
0218	19 62	36 59	26 09			4998 0
0250	18 93	36 54	26 23			4993 3
0268	18 60	36 53	26 31			4991 2
0300	18 13	36 54	26 44			4988 7
0318	17 93	36 55	26 49			4987 9

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T001	03	16	960	12	23° 49'N	077° 16'W	0732	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18	23		24 6	23 3			8	2	17	2	17	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	24 01	36 89	25 09	0 000		5024 2
0000	24 01	36 89	25 09			5024 2
0009	24 03	36 93	25 11			5025 0
0010	24 03	36 92	25 11	0 029		5025 0
0018	24 01	36 88	25 08			5025 2
0020	24 01	36 88	25 08	0 058		5025 3
0027	24 02	36 87	25 07			5025 8
0030	24 02	36 87	25 07	0 087		5026 0
0046	24 03	36 88	25 08			5027 0
0050	24 03	36 88	25 08	0 145		5027 3
0069	24 04	36 90	25 09			5028 6
0075	24 07	36 91	25 09	0 218		5029 2
0092	24 10	36 93	25 09			5030 5
0100	24 07	36 92	25 09	0 291		5030 7
0138	23 91	36 89	25 12			5031 6
0150	23 84	36 88	25 13	0 436		5031 7
0174	23 20	36 87	25 31			5027 8
0200	20 94	36 70	25 82	0 565		5009 3
0229	19 23	36 57	26 18			4995 0
0250	18 77	36 53	26 27	0 668		4991 8
0276	18 27	36 48	26 35			4988 4
0300	18 04	36 44	26 38	0 758		4987 5
0372	17 09	36 33	26 53			4982 0
0400	16 62					
0470	15 19					

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T002	03	16	960	14	23° 57′N	077° 19′W	1353	12

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	16	23		24 6	22 8			8	1	15	2					

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	Σ ΔD ▼	O_2 ml/l ▼	V_f ▼
0000	23 79	36 71	25 02	0 000		5021 7
0000	23 79	36 71	25 02			5021 7
0009	23 83	36 73	25 02			5022 7
0010	23 84	36 74	25 03	0 029		5022 8
0018	23 88	36 78	25 04			5023 8
0020	23 93	36 81	25 05	0 059		5024 4
0027	24 06	36 89	25 07			5026 2
0030	24 07	36 90	25 08	0 088		5026 5
0046	24 12	36 93	25 09			5028 0
0050	24 12	36 93	25 09	0 146		5028 2
0069	24 12	36 93	25 09			5029 3
0075	24 12	36 93	25 09	0 219		5029 7
0092	24 11	36 93	25 09			5030 6
0100	24 06	36 92	25 10	0 292		5030 7
0137	23 85	36 85	25 11			5030 9
0150	23 69	36 79	25 11	0 438		5030 2
0174	22 96	36 86	25 37			5025 8
0200	20 76	36 62	25 81	0 568		5007 4
0229	19 15	36 56	26 19			4994 2
0250	18 81	36 54	26 26	0 671		4992 2
0275	18 41	36 51	26 34			4989 8
0300	18 13	36 47	26 38	0 761		4988 4
0367	17 09	36 32	26 52			4981 7
0400	16 31	36 15	26 58	0 929		4975 2
0463	14 85	35 95	26 75			4963 2
0484	14 37	35 92	26 84			4959 2
0500	14 04	35 87	26 87	1 075		4956 5
0600	12 03	35 57	27 04	1 201		4939 1
0659	10 89	35 43	27 15			4929 0
0800	08 29	35 18	27 39	1 404		4905 1
0837	07 70	35 14	27 45			4899 7
1000	05 50	35 05	27 68	1 544		4880 5
1020	05 32	35 05	27 70			4879 3
1200	04 59	35 09	27 81	1 642		4880 3
1205	04 59	35 09	27 81			4880 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T003	03	16	960	05	24° 01′N	077° 25′W	1280	06

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	14	23		23 9	22 2			8	2	14	2	14	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 m l/l ↓	V_f ↓
0000	23 76	36 60	24 94	0 000		5021 1
0000	23 76	36 60	24 94			5021 1
0009	23 76	36 61	24 95			5021 7
0010	23 76	36 61	24 95	0 030		5021 7
0019	23 77	36 62	24 96			5022 4
0020	23 77	36 62	24 96	0 060		5022 4
0028	23 78	36 61	24 94			5023 0
0030	23 77	36 62	24 96	0 091		5023 0
0046	23 75	36 70	25 02			5024 1
0050	23 79	36 73	25 03	0 150		5024 8
0069	23 92	36 84	25 08			5027 4
0075	23 90	36 84	25 08	0 224		5027 6
0093	23 87	36 84	25 09			5028 4
0100	23 87	36 87	25 12	0 296		5028 9
0139	23 89	36 89	25 12			5031 5
0150	23 02	36 82	25 33	0 437		5024 7
0176	21 32	36 70	25 72			5011 2
0200	20 35	36 64	25 94	0 558		5003 8
0232	19 34	36 57	26 15			4996 2
0250	18 97	36 54	26 22	0 660		4993 7
0278	18 44	36 50	26 33			4990 2
0300	18 18	36 47	26 37	0 751		4988 9
0371	17 15	36 34	26 52			4982 6
0400	16 65	36 27	26 59	0 919		4979 1
0500	14 53	35 97	26 84	1 067		4962 1
0556	13 10	35 75	26 97			4949 1

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T004	03	16	960	06	24° 00′N	077° 21′W	1372	06

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	14	23		24 1	22 4			8	2	14	2	14	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 m l/l ↓	V_f ↓
0000	23 76	36 64	24 97	0 000		5021 2
0000	23 76	36 64	24 97			5021 2
0009	23 77	36 64	24 97			5021 9
0010	23 77	36 64	24 97	0 030		5021 9
0018	23 77	36 65	24 98			5022 4
0020	23 76	36 66	24 99	0 060		5022 5
0027	23 74	36 70	25 02			5022 9
0030	23 74	36 70	25 02	0 090		5023 1
0045	23 75	36 72	25 04			5024 1
0050	23 79	36 76	25 06	0 148		5024 9
0067	23 90	36 84	25 08			5027 1
0075	23 92	36 85	25 09	0 222		5027 8
0090	23 96	36 87	25 09			5029 1
0100	23 97	36 91	25 12	0 294		5029 9
0135	24 00	36 94	25 13			5032 3
0150	23 03	36 90	25 38	0 433		5025 1
0171	21 83	36 83	25 67			5015 9
0200	20 53	36 70	25 93	0 554		5005 6
0225	19 63	36 60	26 10			4998 6
0250	18 96	36 52	26 21	0 655		4993 5
0271	18 48	36 47	26 29			4990 1
0300	18 17	36 45	26 36	0 747		4988 7
0363	17 32	36 36	26 50			4983 9
0400	16 71	36 28	26 58	0 916		4979 7
0500	14 63	35 98	26 83	1 065		4963 2
0550	13 36	35 78	26 94			4951 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T005	03	16	960	07	24° 01′N	077° 18′W	1366	11

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18	23		23 9	22 3			8	2	17	2	17	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ ml/l ↓	V_f ↓
0000	23 77	36 70	25 02	0 000		5021 5
0000	23 77	36 70	25 02			5021 5
0008	23 77	36 70	25 02			5022 0
0010	23 78	36 70	25 01	0 030		5022 2
0017	23 78	36 71	25 02			5022 7
0020	23 76	36 71	25 03	0 059		5022 7
0026	23 74	36 72	25 04			5022 9
0030	23 75	36 73	25 04	0 089		5023 3
0043	23 78	36 75	25 05			5024 4
0050	23 87	36 81	25 07	0 147		5025 7
0065	23 97	36 88	25 09			5027 7
0075	23 94	36 87	25 09	0 220		5028 0
0087	23 91	36 86	25 10			5028 5
0100	23 88	36 86	25 10	0 293		5029 0
0131	23 82	36 86	25 12			5030 3
0150	23 50	36 86	25 22	0 436		5028 8
0167	22 92	36 83	25 36			5024 9
0200	20 42	36 65	25 93	0 560		5004 5
0220	19 40	36 58	26 14			4996 1
0250	18 71	36 52	26 27	0 661		4991 2
0264	18 44	36 50	26 33			4989 4
0300	18 20	36 47	26 36	0 751		4989 1
0356	17 53	36 38	26 46			4985 6
0400	16 59	36 22	26 57	0 920		4978 3
0436	15 94	36 15	26 66			4973 6
0450	15 72	36 14	26 71			4972 2
0500	14 56	35 95	26 82	1 070		4962 3
0600	12 42	35 64	27 02	1 200		4943 8
0600	12 42	35 64	27 02			4943 8
0777	09 24	35 27	27 31			4915 7
0800	08 70	35 23	27 37	1 408		4910 4
0947	06 11	35 08	27 62			4885 6
1000	05 53	35 08	27 70	1 549		4881 1
1128	04 89	35 08	27 77			4880 1

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T006	03	16	960	09	24° 01′N	077° 15′W	1308	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	17	23		23 9	22 2			3	4	17	2	17	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	ΣΔD ▼	O_2 m l/l ▼	V_f ▼
0000	23 99	36 75	24 99	0 000		5023 5
0000	23 99	36 75	24 99			5023 5
0010	23 95	36 77	25 02	0 030		5023 9
0010	23 95	36 77	25 02			5023 9
0019	23 94	36 73	24 99			5024 2
0020	23 94	36 73	24 99	0 059		5024 2
0029	23 96	36 73	24 98			5024 9
0030	23 96	36 73	24 98	0 089		5025 0
0048	23 98	36 74	24 98			5026 3
0050	23 99	36 75	24 99	0 149		5026 5
0072	24 03	36 83	25 04			5028 4
0075	24 03	36 82	25 03	0 224		5028 6
0096	24 03	36 78	25 00			5029 7
0100	24 02	36 79	25 01	0 298		5029 9
0143	23 96	36 79	25 03			5032 0
0150	23 82	36 77	25 05	0 448		5031 2
0181	22 80	36 68	25 28			5024 2
0200	21 27	36 57	25 63	0 583		5011 8
0239	19 11	36 42	26 10			4993 9
0250	18 91	36 41	26 14	0 694		4992 7
0287	18 28	36 38	26 28			4988 8
0300	18 14	36 36	26 30	0 789		4988 1
0384	16 95	36 19	26 46			4980 8
0400	16 67	36 16	26 50	0 964		4978 9
0483	14 89	35 98	26 77			4964 9

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T007	03	16	960	02	24° 15′N	077° 23′W	1810	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	16	23		24 6	23 3					15	2	15	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	23 89	36 77	25 03	0 000		5022 8
0000	23 89	36 77	25 03			5022 8
0009	23 90	36 78	25 04			5023 4
0010	23 90	36 78	25 04	0 029		5023 5
0018	23 90	36 78	25 04			5024 0
0020	23 93	36 80	25 04	0 059		5024 4
0027	24 00	36 84	25 05			5025 5
0030	24 01	36 84	25 05	0 088		5025 8
0046	24 04	36 85	25 05			5027 0
0050	24 06	36 87	25 06	0 147		5027 5
0069	24 13	36 92	25 08			5029 4
0075	24 12	36 92	25 08	0 220		5029 7
0092	24 10	36 93	25 09			5030 5
0100	24 09	36 93	25 09	0 293		5030 9
0138	24 06	36 92	25 10			5032 9
0150	23 78	36 90	25 16	0 438		5031 3
0175	22 90	36 84	25 38			5025 3
0200	21 07	36 71	25 79	0 566		5010 5
0230	19 47	36 59	26 13			4997 4
0250	18 88	36 54	26 25	0 670		4992 9
0277	18 26	36 48	26 36			4988 4
0300	17 97	36 46	26 41	0 760		4986 9
0323	17 71	36 43	26 46			4985 6
0370	17 29	36 37	26 51			4984 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T008	03	15	960	22	24° 28'N	077° 29'W	1954	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	17	23		23 9	21 7			8	2	17	3	17	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
0000	23 77	36 61	24 95	0 000		5021 2
0000	23 77	36 61	24 95			5021 2
0008	23 77	36 61	24 95			5021 7
0010	23 77	36 61	24 95	0 030		5021 8
0016	23 77	36 61	24 95			5022 2
0020	23 75	36 61	24 95	0 060		5022 3
0024	23 73	36 61	24 96			5022 3
0030	23 73	36 63	24 97	0 090		5022 8
0039	23 74	36 66	24 99			5023 5
0050	23 75	36 71	25 03	0 150		5024 4
0059	23 76	36 75	25 06			5025 2
0075	23 84	36 84	25 10	0 223		5027 1
0079	23 86	36 85	25 10			5027 5
0100	23 88	36 86	25 10	0 296		5029 0
0119	23 89	36 86	25 10			5030 2
0150	23 91	36 88	25 11	0 442		5032 3
0152	23 91	36 88	25 11			5032 4
0200	22 52	36 83	25 48	0 580		5023 5
0200	22 52	36 83	25 48			5023 5
0242	19 43	36 58	26 13			4997 7
0250	19 27	36 57	26 17	0 693		4996 6
0300	18 31	36 49	26 35	0 786		4990 2
0335	17 72	36 43	26 45			4986 4
0400	16 78	36 30	26 58	0 955		4980 5
0428	16 44	36 24	26 62			4978 5

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T009	03	16	960	21	24° 23'N	077° 39'W	1349	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	16	23		24 6	23 3			8	3	18	2					

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	Σ Δ D ▼	O₂ m l/l ▼	V_f ▼
0000	23 92	36 62	24 91	0 000		5022 5
0000	23 92	36 62	24 91			5022 5
0010	23 90	36 62	24 92	0 031		5022 9
0010	23 90	36 62	24 92			5022 9
0020	23 80	36 63	24 95	0 061		5022 7
0020	23 80	36 63	24 95			5022 7
0030	23 73	36 70	25 03	0 091		5023 0
0030	23 73	36 70	25 03			5023 0
0050	23 77	36 75	25 05	0 150		5024 7
0050	23 77	36 75	25 05			5024 7
0075	23 89	36 86	25 10	0 223		5027 6
0075	23 89	36 86	25 10			5027 6
0100	23 84	36 86	25 12	0 295		5028 7
0100	23 84	36 86	25 12			5028 7
0150	23 35	36 95	25 33	0 435		5027 9
0150	23 35	36 95	25 33			5027 9
0190	19 52	36 59	26 12			4995 5
0200	19 29	36 58	26 17	0 551		4993 9
0250	18 36	36 51	26 36	0 644		4987 8
0250	18 36	36 51	26 36			4987 8
0300	17 84	36 44	26 43	0 730		4985 5
0300	17 84	36 44	26 43			4985 5
0400	16 48	36 23	26 60	0 895		4977 3
0400	16 48	36 23	26 60			4977 3
0500	14 37	35 92	26 84	1 042		4960 2
0500	14 37	35 92	26 84			4960 2

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T009	03	17	960	03	24° 23'N	077° 39'W	1349	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	12	23		24 8	23 3					12	2	12	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 m l/l ↓	V_f ↓
0000	24 01	36 62	24 88	0 000		5023 2
0000	24 01	36 62	24 88			5023 2
0010	23 97	36 64	24 91	0 031		5023 6
0010	23 97	35 38	23 96			5019 1
0020	23 76	36 68	25 00	0 061		5022 6
0020	23 76	36 68	25 00			5022 6
0030	23 76	36 74	25 05	0 090		5023 4
0030	23 76	36 74	25 05			5023 4
0050	23 81	36 79	25 07	0 149		5025 2
0050	23 81	36 79	25 07			5025 2
0075	23 80	36 81	25 09	0 222		5026 7
0075	23 80	36 81	25 09			5026 7
0100	23 79	36 83	25 11	0 294		5028 1
0100	23 79	36 83	25 11			5028 1
0150	23 26	36 99	25 39	0 433		5027 3
0150	23 26	36 99	25 39			5027 3
0190	19 80	36 60	26 05			4998 1
0200	19 54	36 58	26 11	0 550		4996 2
0250	18 56	36 51	26 30	0 645		4989 7
0250	18 56	36 51	26 30			4989 7
0300	18 06	36 46	26 39	0 734		4987 7
0300	18 06	36 46	26 39			4987 7
0400	16 80	36 29	26 57	0 902		4980 7
0400	16 80	36 29	26 57			4980 7
0500	14 69	35 95	26 79	1 053		4963 7
0500	14 69	35 95	26 79			4963 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T009	03	17	960	10	24° 23'N	077° 39'W	1349	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18	23		23 9	22 2			8	2	17	2	17	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	23 81	36 66	24 97	0 000		5021 7
0000	23 81	36 66	24 97			5021 7
0010	23 82	36 66	24 97	0 030		5022 4
0010	23 82	36 66	24 97			5022 4
0020	23 79	36 68	24 99	0 060		5022 8
0020	23 79	36 68	24 99			5022 8
0030	23 79	36 76	25 06	0 089		5023 7
0030	23 79	36 76	25 06			5023 7
0050	23 83	36 79	25 07	0 148		5025 3
0050	23 83	36 79	25 07			5025 3
0075	23 79	36 81	25 09	0 221		5026 6
0075	23 79	36 81	25 09			5026 6
0100	23 81	36 83	25 10	0 293		5028 3
0100	23 81	36 83	25 10			5028 3
0150	23 16	36 97	25 40	0 432		5026 4
0150	23 16	36 97	25 40			5026 4
0190	19 53	36 59	26 12			4995 5
0200	19 33	36 57	26 15	0 547		4994 2
0250	18 44	36 50	26 33	0 641		4988 5
0250	18 44	36 50	26 33			4988 5
0300	17 78	36 43	26 44	0 728		4984 9
0300	17 78	36 43	26 44			4984 9
0400	16 44	36 22	26 60	0 892		4976 8
0400	16 44	36 22	26 60			4976 8
0500	14 89	35 99	26 78	1 042		4965 9
0500	14 89	35 99	26 78			4965 9

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T009	03	17	962	21	24° 23'N	077° 39'W	1349	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	14	23		24 3	23 3			8	1	13	2					

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O₂ml/l ↓	V_f ↓
0000	23 97	36 68	24 94	0 000		5023 1
0000	23 97	36 68	24 94			5023 1
0010	23 90	36 68	24 96	0 030		5023 1
0010	23 90	36 68	24 96			5023 1
0020	23 79	36 74	25 04	0 060		5023 0
0020	23 79	36 74	25 04			5023 0
0030	23 79	36 76	25 06	0 089		5023 7
0030	23 79	36 76	25 06			5023 7
0050	23 80	36 78	25 07	0 148		5025 1
0050	23 80	36 78	25 07			5025 1
0075	23 80	36 81	25 09	0 221		5026 7
0075	23 80	36 81	25 09			5026 7
0100	23 80	36 83	25 11	0 293		5028 2
0100	23 80	36 83	25 11			5028 2
0150	23 34	36 93	25 32	0 434		5027 8
0150	23 34	36 93	25 32			5027 8
0190	20 43	36 64	25 92			5003 9
0200	20 07	36 62	26 00	0 555		5001 2
0250	18 69	36 53	26 29	0 653		4991 0
0250	18 69	36 53	26 29			4991 0
0300	18 06	36 46	26 39	0 742		4987 7
0300	18 06	36 46	26 39			4987 7
0400	16 97	36 30	26 54	0 912		4982 4
0400	16 97	36 30	26 54			4982 4
0500	15 30	36 05	26 73	1 067		4970 4
0500	15 30	36 05	26 73			4970 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T009	03	18	960	04	24° 23'N	077° 39'W	1349	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	14	23		24 4	23 6				0	13	2	13	1			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	Σ Δ D ▼	O_2 ml/l ▼	V_f ▼
0000	23 80	36 71	25 01	0 000		5021 8
0000	23 80	36 71	25 01			5021 8
0010	23 83	36 71	25 01	0 030		5022 7
0010	23 83	36 71	25 01			5022 7
0020	23 83	36 71	25 01	0 059		5023 3
0020	23 83	36 71	25 01			5023 3
0030	23 78	36 73	25 04	0 089		5023 5
0030	23 78	36 73	25 04			5023 5
0050	23 82	36 78	25 06	0 148		5025 2
0050	23 82	36 78	25 06			5025 2
0075	23 92	36 87	25 10	0 220		5027 9
0075	23 92	36 87	25 10			5027 9
0100	23 83	36 85	25 11	0 293		5028 5
0100	23 83	36 85	25 11			5028 5
0150	23 63	36 87	25 19	0 437		5030 0
0150	23 63	36 87	25 19			5030 0
0150	23 63	36 87	25 19			5030 0
0190	22 58	36 82	25 45			5023 4
0200	21 81	36 76	25 63	0 569		5017 2
0250	19 10	36 56	26 20	0 678		4995 0
0250	19 10	36 56	26 20			4995 0
0300	18 28	36 49	26 36	0 770		4989 9
0300	18 28	36 49	26 36			4989 9
0400	16 98	36 31	26 54	0 941		4982 5
0400	16 98	36 31	26 54			4982 5
0500	15 38	36 07	26 73	1 097		4971 3
0500	15 38	36 07	26 73			4971 3

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T010	03	18	960	16	24° 33′N	077° 38′W	1554	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ₩	WET ₩			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
14	24	23		26 2	24 6			8	6	22	3	18	3			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
0000	24 00	36 70	24 95	0 000		5023 4
0000	24 00	36 70	24 95			5023 4
0007	23 99	36 70	24 95			5023 7
0010	23 97	36 71	24 96	0 030		5023 8
0015	23 95	36 73	24 99			5024 0
0020	23 96	36 74	24 99	0 060		5024 4
0022	23 96	36 74	24 99			5024 5
0030	23 97	36 74	24 99	0 090		5025 1
0037	23 97	36 74	24 99			5025 5
0050	23 83	36 71	25 01	0 150		5025 1
0057	23 80	36 71	25 01			5025 2
0075	23 87	36 80	25 06	0 224		5027 2
0076	23 87	36 80	25 06			5027 3
0100	23 86	36 83	25 09	0 297		5028 7
0116	23 85	36 86	25 11			5029 7
0150	23 84	36 94	25 18	0 442		5031 9
0157	23 84	36 96	25 19			5032 4
0198	21 89	36 74	25 59			5017 7
0200	21 75	36 73	25 62	0 574		5016 5
0242	19 40	36 58	26 14			4997 4
0250	19 27	36 57	26 17	0 684		4996 6
0300	18 44	36 51	26 34	0 778		4991 5
0333	17 88	36 45	26 43			4987 9
0400	16 71	36 31	26 61	0 947		4979 9
0500	14 90	36 02	26 80	1 096		4966 2
0526	14 41	35 93	26 84			4962 2

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T011	03	18	960	15	24° 36'N	077° 31'W	1705	06

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	16	23		25 0	23 5			0	6	16	2	16	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	23 93	36 55	24 86	0 000		5022 3
0000	23 93	36 55	24 86			5022 3
0009	23 91	36 54	24 85			5022 6
0010	23 90	36 54	24 86	0 031		5022 6
0018	23 87	36 54	24 87			5022 9
0020	23 87	36 54	24 87	0 062		5023 0
0027	23 87	36 54	24 87			5023 4
0030	23 83	36 55	24 88	0 093		5023 3
0045	23 70	36 60	24 96			5023 3
0050	23 75	36 65	24 98	0 154		5024 2
0068	23 83	36 77	25 05			5026 3
0075	23 80	36 77	25 06	0 228		5026 5
0090	23 76	36 78	25 08			5027 1
0100	23 79	36 80	25 09	0 302		5028 0
0136	23 83	36 87	25 13			5030 8
0150	23 78	36 94	25 19	0 446		5031 4
0181	23 68	36 95	25 23			5032 5
0200	21 78	36 78	25 65	0 577		5017 0
0226	19 88	36 61	26 04			5001 0
0250	19 05	36 55	26 21	0 686		4994 5
0271	18 47	36 51	26 33			4990 1
0300	18 24	36 48	26 36	0 778		4989 5
0365	17 46	36 38	26 48			4985 5
0400	16 89	36 30	26 56	0 948		4981 6
0500	14 67	35 98	26 82	1 098		4963 6
0561	12 89	35 71	26 98			4947 0

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T012	03	18	960	13	24° 38'N	077° 27'W	1353	06

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	16	23		25 1	23 9			3	6	16	2	16	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	23 87	36 52	24 85	0 000		5021 7
0000	23 87	36 52	24 85			5021 7
0010	23 89	36 52	24 84	0 031		5022 5
0010	23 89	36 52	24 84			5022 5
0019	23 87	36 52	24 85			5022 8
0020	23 87	36 52	24 85	0 062		5022 9
0029	23 87	36 52	24 85			5023 4
0030	23 86	36 53	24 86	0 093		5023 5
0048	23 69	36 63	24 99			5023 5
0050	23 68	36 64	25 00	0 154		5023 6
0073	23 68	36 70	25 04			5025 2
0075	23 70	36 71	25 04	0 229		5025 5
0097	23 82	36 81	25 08			5028 1
0100	23 81	36 82	25 10	0 302		5028 3
0145	23 72	36 87	25 16			5030 4
0150	23 59	36 86	25 19	0 446		5029 6
0194	21 90	36 74	25 59			5017 5
0200	21 42	36 71	25 70	0 577		5013 6
0242	18 95	36 54	26 23			4993 0
0250	18 77	36 52	26 26	0 683		4991 7
0290	17 98	36 44	26 40			4986 3
0300	17 91	36 43	26 41	0 773		4986 2
0388	16 92	36 29	26 54			4981 2
0400	16 73	36 26	26 56	0 940		4979 9
0500	14 59	35 96	26 82	1 090		4962 7
0585	12 02	35 59	27 06			4938 2

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T013	03	18	960	18	24° 45′N	077° 36′W	1856	06

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
14	24	23		27 8	24 3			8	3	22	2					

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	24 02	36 54	24 82	0 000		5023 0
0000	24 02	36 54	24 82			5023 0
0009	23 99	36 54	24 83			5023 3
0010	23 98	36 54	24 83	0 031		5023 3
0018	23 94	36 56	24 86			5023 5
0020	23 92	36 56	24 87	0 063		5023 5
0027	23 88	36 56	24 88			5023 6
0030	23 88	36 56	24 88	0 093		5023 7
0045	23 88	36 57	24 89			5024 7
0050	23 84	36 58	24 90	0 155		5024 7
0067	23 75	36 63	24 97			5025 1
0075	23 74	36 64	24 98	0 231		5025 6
0090	23 73	36 68	25 01			5026 5
0100	23 77	36 73	25 04	0 306		5027 6
0135	23 86	36 85	25 10			5030 9
0150	23 85	36 86	25 11	0 453		5031 7
0182	23 82	36 88	25 14			5033 5
0200	21 75	36 75	25 64	0 587		5016 6
0228	19 13	36 58	26 21			4994 0
0250	18 96	36 55	26 23	0 696		4993 6
0300	18 44	36 55	26 37	0 787		4991 7
0373	17 35	36 37	26 50			4984 8
0400	16 85	36 27	26 54	0 957		4981 1
0500	14 54	35 71	26 64	1 117		4961 2
0568	12 56	35 17	26 63			4941 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T014	03	18	960	23	24° 55′N	077° 40′W	1975	15

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	23	23		27 2	24 4			7	5	20	2					

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	ΣΔD ▼	O_2 ml/l ▼	V_f ▼
0000	24 12	36 47	24 74	0 000		5023 6
0000	24 12	36 47	24 74			5023 6
0010	24 12	36 47	24 74	0 032		5024 2
0010	24 12	36 47	24 74			5024 2
0020	23 99	36 47	24 78	0 064		5023 7
0020	23 99	36 47	24 78			5023 7
0030	23 97	36 48	24 79	0 096		5024 2
0030	23 97	36 48	24 79			5024 2
0050	23 73	36 53	24 90	0 159		5023 6
0050	23 73	36 53	24 90			5023 6
0074	23 64	36 55	24 94			5024 4
0075	23 64	36 56	24 95	0 235		5024 5
0099	23 67	36 68	25 03			5026 6
0100	23 69	36 68	25 02	0 311		5026 8
0149	23 79	36 82	25 10			5031 0
0150	23 76	36 82	25 11	0 458		5030 8
0198	21 85	36 74	25 60			5017 3
0200	21 70	36 73	25 63	0 592		5016 1
0248	19 03	36 56	26 22			4994 2
0250	18 99	36 56	26 23	0 701		4994 0
0297	18 17	36 48	26 38			4988 7
0300	18 14	36 48	26 39	0 791		4988 6
0397	16 76	36 27	26 56			4980 0
0400	16 69	36 26	26 57	0 959		4979 5
0496	14 45	35 93	26 83			4960 8
0500	14 34	35 91	26 83	1 108		4959 8
0582	12 20	35 59	27 03			4940 0
0600	11 86	35 54	27 05	1 235		4937 1
0777	08 71	35 19	27 33			4908 9
0800	08 24	35 17	27 39	1 436		4904 4
0971	05 67	35 08	27 68			4881 2
1000	05 50	35 07	27 69	1 575		4880 6
1165	04 74	35 03	27 75			4880 0
1200	04 62	35 02	27 76	1 677		4880 4
1456	04 21	35 00	27 79			4889 9

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T015	03	19	960	03	25° 05'N	077° 52'W	1600	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
14	27	23		22 3	19 8			8	5	27	4	25	3			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
0000	23 84	36 48	24 83	0 000		5021 3
0000	23 84	36 48	24 83			5021 3
0007	23 86	36 48	24 82			5021 9
0010	23 85	36 48	24 83	0 031		5022 0
0014	23 84	36 48	24 83			5022 2
0020	23 84	36 48	24 83	0 063		5022 5
0021	23 84	36 48	24 83			5022 6
0030	23 86	36 48	24 82	0 094		5023 3
0036	23 87	36 48	24 82			5023 7
0050	23 87	36 49	24 83	0 157		5024 6
0055	23 86	36 49	24 83			5024 8
0074	23 79	36 50	24 86			5025 4
0075	23 79	36 50	24 86	0 236		5025 5
0100	23 75	36 52	24 89	0 314		5026 7
0112	23 72	36 55	24 92			5027 3
0150	23 61	36 69	25 06	0 466		5029 1
0150	23 61	36 69	25 06			5029 1
0189	22 59	36 73	25 38			5023 1
0200	21 70	36 70	25 61	0 602		5016 0
0228	19 87	36 62	26 05			5001 0
0250	19 32	36 58	26 16	0 712		4997 1
0300	18 19	36 49	26 38	0 805		4989 1
0310	17 98	36 47	26 42			4987 6
0400	16 45	36 29	26 65	0 969		4977 2
0490	15 48	36 08	26 71			4971 8

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T016	03	19	960	04	25° 06′N	077° 47′W	2432	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ▼	WET ▼			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
13	27	23		25 8	24 5			8	8	27	2	27	2			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	$\Sigma \Delta D$ ▼	O_2 ml/l ▼	V_f ▼
0000	23 90	36 49	24 82	0 000		5021 9
0000	23 90	36 49	24 82			5021 9
0006	23 90	36 47	24 80			5022 1
0010	23 89	36 46	24 80	0 032		5022 3
0012	23 89	36 46	24 80			5022 4
0017	23 91	36 48	24 81			5022 9
0020	23 92	36 48	24 81	0 063		5023 2
0029	23 92	36 48	24 81			5023 7
0030	23 92	36 48	24 81	0 095		5023 8
0043	23 86	36 47	24 82			5024 0
0050	23 84	36 48	24 83	0 158		5024 3
0057	23 81	36 48	24 84			5024 5
0075	23 74	36 51	24 88	0 236		5025 1
0086	23 70	36 53	24 91			5025 5
0100	23 62	36 57	24 96	0 313		5025 8
0116	23 59	36 62	25 01			5026 7
0146	23 71	36 73	25 06			5029 9
0150	23 47	36 75	25 14	0 461		5028 2
0177		36 80				
0200	20 77	36 71	25 88	0 589		5007 8
0243	18 97	36 56	26 24			4993 4
0250	18 72	36 54	26 29	0 690		4991 3
0300	17 31	36 41	26 54	0 776		4980 3
0400	16 51	36 25	26 61	0 935		4977 6
0404	16 45	36 25	26 62			4977 3

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T017	03	19	960	06	25° 04'N	077° 44'W	2578	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
14	32	23		26 3	23 9			8	8	32	2	32	3			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ m l/l ↓	V_f ↓
0000	23 94	36 46	24 78	0 000		5022 1
0000	23 94	36 46	24 78			5022 1
0006	23 95	36 47	24 79			5022 6
0010	24 07	36 48	24 76	0 032		5023 8
0012	24 08	36 48	24 76			5024 0
0018	23 95	36 48	24 80			5023 3
0020	23 95	36 48	24 80	0 064		5023 4
0030	23 94	36 47	24 79	0 095		5023 9
0030	23 94	36 47	24 79			5023 9
0047	23 76	36 51	24 88			5023 6
0050	23 74	36 53	24 90	0 158		5023 7
0061	23 68	36 58	24 95			5024 0
0075	23 62	36 58	24 97	0 234		5024 4
0092	23 60	36 59	24 98			5025 3
0100	23 67	36 63	24 99	0 310		5026 4
0125	23 77	36 74	25 05			5029 2
0150	23 72	36 80	25 11	0 458		5030 4
0157	23 64	36 81	25 14			5030 2
0191		36 76				
0200	21 22	36 73	25 77	0 589		5011 9
0250	18 98	36 56	26 24	0 694		4993 9
0263	18 50	36 52	26 33			4990 0
0300	17 37	36 42	26 53	0 782		4980 9
0400	16 60	36 25	26 59	0 942		4978 5
0433	16 14	36 22	26 67			4975 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00659	T018	03	19	960	07	25° 03′N	077° 40′W	1957	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
13	32	23		21 1	18 8			8	8	32	3	32	3			

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	23 94	36 48	24 80	0 000		5022 1
0000	23 94	36 48	24 80			5022 1
0007	23 95	36 48	24 80			5022 6
0010	23 95	36 48	24 80	0 032		5022 8
0014	23 95	36 48	24 80			5023 1
0020	23 95	36 48	24 80	0 063		5023 4
0021	23 95	36 48	24 80			5023 5
0030	23 94	36 50	24 81	0 095		5024 0
0035	23 94	36 51	24 82			5024 3
0050	23 71	36 59	24 95	0 157		5023 6
0053	23 69	36 60	24 96			5023 7
0071	23 70	36 65	25 00			5025 0
0075	23 70	36 65	25 00	0 232		5025 3
0100	23 70	36 66	25 01	0 307		5026 8
0106	23 70	36 67	25 01			5027 2
0143	23 70	36 77	25 09			5029 8
0150	23 60	36 80	25 14	0 455		5029 5
0179	23 01	36 85	25 35			5026 5
0200	21 90	36 76	25 60	0 589		5017 9
0217		36 69				
0250	19 61	36 59	26 09	0 701		4999 8
0288	18 21	36 49	26 38			4988 6
0300	17 83	36 46	26 45	0 794		4985 5
0400	15 81	36 21	26 74	0 950		4970 4
0460	15 58	36 08	26 69			4971 1

APPENDIX IV

THERMAL ARRAY DATA

The following is a listing of temperature data taken as part of the thermal array described previously. The data points have been tabulated from the wire resistance thermometer placed at the 700' depth at Apex buoy A and the two dan buoys D and E (Figure 2). The data were collected at one minute intervals for 17 1/2 hours on 12 March 1960, and are reported in degrees Centigrade.

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
0015	23.5	23.1	23.6	0050	23.1	22.0	23.6	0125	22.2	21.4	23.2
0016	23.5	23.1	23.6	0051	23.1	21.9	23.6	0126	21.9	21.4	23.1
0017	23.5	23.1	23.6	0052	23.0	21.9	23.6	0127	21.8	21.3	23.1
0018	23.5	23.0	23.6	0053	23.0	21.8	23.6	0128	21.8	21.2	23.0
0019	23.5	23.0	23.6	0054	23.1	21.7	23.6	0129	21.7	20.9	23.0
0020	23.5	23.1	23.6	0055	23.1	21.8	23.6	0130	21.6	20.9	22.9
0021	23.5	23.1	23.6	0056	23.0	21.5	23.6	0131	21.6	20.8	22.8
0022	23.5	23.1	23.6	0057	23.0	21.5	23.5	0132	21.6	20.7	22.6
0023	23.5	23.1	23.6	0058	23.0	21.5	23.5	0133	21.6	20.6	22.4
0024	23.5	23.0	23.6	0059	23.0	21.5	23.5	0134	21.5	20.5	22.3
0025	23.5	23.0	23.6	0100	23.0	21.5	23.5	0135	21.4	20.5	22.1
0026	23.5	23.0	23.6	0101	23.0	21.5	23.5	0136	21.3	20.5	21.9
0027	23.5	22.8	23.6	0102	23.0	21.5	23.5	0137	21.3	20.5	21.8
0028	23.5	22.6	23.6	0103	22.9	21.5	23.5	0138	21.3	20.5	21.7
0029	23.5	22.5	23.6	0104	22.9	21.5	23.5	0139	21.3	20.5	21.7
0030	23.5	22.5	23.6	0105	22.9	21.4	23.5	0140	21.3	20.5	21.6
0031	23.5	22.6	23.6	0106	23.0	21.5	23.4	0141	21.3	20.5	21.7
0032	23.5	22.8	23.6	0107	23.0	21.4	23.4	0142	21.4	20.5	21.6
0033	23.5	23.0	23.6	0108	23.0	21.5	23.4	0143	21.3	20.5	21.5
0034	23.5	23.0	23.6	0109	23.0	21.5	23.4	0144	21.3	20.4	21.5
0035	23.5	23.0	23.6	0110	23.0	21.5	23.4	0145	21.3	20.4	21.5
0036	23.5	23.0	23.6	0111	23.0	21.5	23.4	0146	21.3	20.2	21.5
0037	23.4	22.8	23.6	0112	23.0	21.5	23.4	0147	21.3	20.1	21.5
0038	23.4	22.8	23.6	0113	23.0	21.5	23.4	0148	21.3	20.1	21.5
0039	23.4	22.4	23.6	0114	23.0	21.5	23.4	0149	21.3	20.0	21.4
0040	23.4	22.4	23.6	0115	22.9	21.4	23.4	0150	21.3	20.0	21.4
0041	23.4	22.3	23.6	0116	22.8	21.4	23.4	0151	21.3	20.0	21.4
0042	23.4	22.3	23.6	0117	22.8	21.4	23.4	0152	21.3	20.0	21.4
0043	23.4	22.4	23.6	0118	22.8	21.4	23.4	0153	21.3	19.9	21.4
0044	23.4	22.3	23.6	0119	22.8	21.4	23.4	0154	21.3	19.9	21.4
0045	23.4	22.3	23.6	0120	22.7	21.4	23.4	0155	21.3	19.9	21.4
0046	23.3	22.1	23.6	0121	22.6	21.4	23.3	0156	21.3	19.9	21.4
0047	23.1	22.0	23.6	0122	22.5	21.4	23.2	0157	21.3	19.9	21.4
0048	23.1	21.9	23.6	0123	22.4	21.4	23.2	0158	21.3	19.9	21.4
0049	23.1	21.8	23.6	0124	22.3	21.4	23.2	0159	21.4	19.9	21.4

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
0200	21.6	20.0	21.6	0235	22.0	20.4	22.5	0310	21.4	19.8	21.4
0201	22.2	20.3	22.0	0236	22.0	20.4	22.5	0311	21.4	19.8	21.4
0202	22.4	20.7	22.7	0237	22.0	20.4	22.5	0312	21.4	19.8	21.4
0203	22.5	21.0	22.7	0238	22.0	20.4	22.5	0313	21.4	19.9	21.4
0204	22.8	21.3	23.0	0239	22.0	20.4	22.7	0314	21.4	19.9	21.4
0205	22.9	21.4	23.1	0240	22.0	20.4	22.3	0315	21.3	19.9	21.4
0206	22.9	21.4	23.2	0241	21.9	20.4	22.2	0316	21.3	19.8	21.3
0207	22.9	21.4	23.2	0242	21.8	20.2	22.2	0317	21.2	19.8	21.3
0208	22.9	21.4	23.3	0243	21.8	20.1	22.1	0318	21.2	19.8	21.3
0209	22.9	21.4	23.3	0244	21.7	20.0	22.1	0319	21.2	19.8	21.3
0210	22.8	21.4	23.2	0245	21.6	20.0	22.1	0320	21.2	19.8	21.2
0211	22.7	21.4	23.2	0246	21.6	20.0	21.7	0321	21.2	19.8	21.1
0212	22.7	21.4	23.2	0247	21.4	19.9	21.5	0322	21.2	19.8	21.1
0213	22.6	21.4	23.2	0248	21.3	19.8	21.4	0323	21.2	19.8	21.1
0214	22.6	21.3	23.2	0249	21.4	19.8	21.4	0324	21.2	19.8	21.1
0215	22.6	21.3	23.2	0250	21.4	19.8	21.4	0325	21.2	19.8	21.1
0216	22.6	21.3	23.2	0251	21.5	19.8	21.4	0326	21.2	19.8	21.0
0217	22.6	21.3	23.2	0252	21.6	19.8	21.4	0327	21.2	19.8	21.0
0218	22.5	21.2	23.2	0253	21.7	19.9	21.5	0328	21.2	19.8	20.8
0219	22.3	21.0	23.0	0254	21.7	19.9	21.5	0329	21.2	19.8	20.6
0220	22.2	20.9	23.0	0255	21.8	19.9	21.8	0330	21.2	19.8	20.5
0221	22.2	20.9	22.8	0256	21.8	19.9	21.9	0331	21.2	19.8	20.3
0222	22.2	20.8	22.7	0257	21.8	19.9	22.0	0332	21.2	19.8	20.4
0223	22.1	20.8	22.6	0258	21.7	19.9	22.0	0333	21.2	19.8	20.4
0224	22.1	20.8	22.6	0259	21.7	19.9	21.9	0334	21.2	19.8	20.5
0225	22.0	20.7	22.5	0300	21.7	19.9	21.9	0335	21.2	19.8	20.6
0226	21.9	20.5	22.5	0301	21.7	19.9	21.8	0336	21.2	19.8	20.7
0227	21.7	20.5	22.4	0302	21.6	19.9	21.7	0337	21.2	19.8	20.8
0228	21.8	20.4	22.5	0303	21.5	19.9	21.5	0338	21.2	19.8	21.0
0229	21.9	20.4	22.5	0304	21.4	19.9	21.4	0339	21.2	19.8	21.0
0230	22.0	20.4	22.5	0305	21.3	19.9	21.4	0340	21.2	19.8	21.0
0231	22.0	20.4	22.5	0306	21.3	19.8	21.4	0341	21.2	19.8	21.0
0232	22.0	20.3	22.5	0307	21.3	19.8	21.4	0342	21.2	19.8	21.1
0233	22.0	20.3	22.5	0308	21.4	19.8	21.4	0343	21.2	19.8	21.0
0234	22.0	20.4	22.5	0309	21.4	19.8	21.4	0344	21.2	19.8	20.8

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
0345	21.1	19.8	20.6	0420	21.2	19.8	20.3	0455	22.5	20.4	22.0
0346	21.0	19.8	20.5	0421	21.2	19.8	20.3	0456	22.4	20.4	22.0
0347	21.0	19.8	20.4	0422	21.2	19.8	20.2	0457	22.4	20.3	21.8
0348	21.0	19.8	20.4	0423	21.2	19.8	20.2	0458	22.3	20.3	21.8
0349	21.0	19.8	20.4	0424	21.0	19.8	20.2	0459	22.3	20.2	21.7
0350	21.0	19.8	20.3	0425	21.2	19.8	20.2	0500	22.3	20.3	21.7
0351	21.0	19.8	20.3	0426	21.2	19.8	20.2	0501	22.3	20.4	21.7
0352	21.0	19.8	20.3	0427	21.2	19.8	20.3	0502	22.3	20.4	21.7
0353	21.0	19.8	20.3	0428	21.2	19.8	20.3	0503	22.3	20.5	21.7
0354	21.0	19.8	20.4	0429	21.3	19.8	20.4	0504	22.3	20.6	21.7
0355	21.2	19.8	20.4	0430	21.4	19.9	20.6	0505	22.3	20.6	21.7
0356	21.2	19.8	20.6	0431	21.7	19.9	20.8	0506	22.4	20.6	21.7
0357	21.2	19.8	20.7	0432	22.1	20.0	21.1	0507	22.4	20.6	21.7
0358	21.3	19.8	20.8	0433	22.2	20.1	21.3	0508	22.4	20.6	21.7
0359	21.2	19.8	21.0	0434	22.4	20.2	21.4	0509	22.4	20.5	21.7
0400	21.2	19.8	21.1	0435	22.4	20.2	21.7	0510	22.4	20.5	21.7
0401	21.3	19.8	21.1	0436	22.5	20.2	21.7	0511	22.3	20.4	21.6
0402	21.3	19.8	21.0	0437	22.5	20.2	21.8	0512	22.2	20.4	21.6
0403	21.2	19.8	21.0	0438	22.5	20.3	21.9	0513	22.2	20.4	21.5
0404	21.2	19.8	21.0	0439	22.4	20.3	21.8	0514	22.2	20.4	21.5
0405	21.2	19.8	21.0	0440	22.5	20.3	21.8	0515	22.1	20.4	21.4
0406	21.2	19.8	20.9	0441	22.4	20.3	21.8	0516	22.1	20.4	21.4
0407	21.2	19.8	20.8	0442	22.4	20.4	21.8	0517	22.1	20.4	21.4
0408	21.2	19.8	20.8	0443	22.4	20.4	21.8	0518	22.1	20.4	21.4
0409	21.2	19.8	20.8	0444	22.4	20.5	21.9	0519	22.1	20.4	21.4
0410	21.2	19.8	20.8	0445	22.4	20.6	22.0	0520	22.4	20.4	21.4
0411	21.2	19.8	20.7	0446	22.5	20.6	22.2	0521	22.5	20.4	21.4
0412	21.1	19.8	20.6	0447	22.5	20.5	22.2	0522	22.5	20.4	21.5
0413	21.1	19.8	20.5	0448	20.6	20.6	22.1	0523	22.5	20.4	21.5
0414	21.1	19.8	20.4	0449	22.7	20.6	21.8	0524	22.2	20.4	21.5
0415	21.2	19.8	20.4	0450	22.7	20.7	21.8	0525	22.0	20.4	21.4
0416	21.2	19.8	20.4	0451	22.7	20.7	21.8	0526	22.0	20.4	21.4
0417	21.2	19.8	20.4	0452	22.6	20.8	21.8	0527	22.0	20.4	21.4
0418	21.2	19.8	20.4	0453	22.6	20.7	21.9	0528	22.0	20.4	21.4
0419	21.2	19.8	20.3	0454	22.5	20.5	22.0	0529	22.0	20.4	21.4

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
0530	22.0	20.4	21.4	0605	22.6	20.6	21.7	0640	22.3	21.2	22.2
0531	21.9	20.4	21.4	0606	22.6	20.7	21.8	0641	22.2	21.2	22.2
0532	21.9	20.4	21.4	0607	22.5	20.7	22.0	0642	22.3	21.2	22.2
0533	21.9	20.3	21.4	0608	22.5	20.8	22.0	0643	22.3	21.2	22.2
0534	22.0	20.3	21.4	0609	22.5	20.8	22.0	0644	22.4	21.2	22.3
0535	22.2	20.4	21.4	0610	22.5	21.0	22.0	0645	22.4	21.2	22.4
0536	22.1	20.6	21.6	0611	22.4	21.0	22.0	0646	22.4	21.2	22.4
0537	22.1	20.8	21.7	0612	22.4	21.0	22.0	0647	22.4	21.3	22.4
0538	22.2	20.9	21.7	0613	22.4	20.8	22.0	0648	22.4	21.3	22.4
0539	22.2	20.9	21.7	0614	22.4	20.8	22.0	0649	22.5	21.4	22.4
0540	22.2	20.8	21.6	0615	22.3	21.0	22.1	0650	22.4	21.4	22.4
0541	22.1	20.7	21.6	0616	22.4	21.0	22.2	0651	22.4	21.4	22.4
0542	22.3	20.5	21.6	0617	22.4	21.0	22.2	0652	22.4	21.5	22.4
0543	22.3	20.4	21.6	0618	22.4	21.0	22.1	0653	22.5	21.5	22.5
0544	22.3	20.4	21.5	0619	22.4	21.0	22.0	0654	22.6	21.6	22.6
0545	22.4	20.4	21.6	0620	22.4	21.0	22.0	0655	22.7	21.7	22.6
0546	22.4	20.5	21.6	0621	22.4	21.1	22.0	0656	22.7	21.7	22.7
0547	22.5	20.5	21.6	0622	22.4	21.2	22.2	0657	22.7	21.8	22.8
0548	22.4	20.5	21.6	0623	22.4	21.2	22.2	0658	22.7	22.0	22.9
0549	22.2	20.5	21.8	0624	22.4	21.2	22.2	0659	22.7	22.1	22.9
0550	22.0	20.5	21.7	0625	22.4	21.2	22.2	0700	22.8	22.1	23.0
0551	22.0	20.5	21.4	0626	22.4	21.2	22.1	0701	22.8	22.1	23.0
0552	22.0	20.5	21.4	0627	22.4	21.2	22.1	0702	22.9	22.2	23.1
0553	22.0	20.6	21.4	0628	22.5	21.2	22.2	0703	22.9	22.2	23.2
0554	22.0	20.6	21.4	0629	22.4	21.3	22.2	0704	22.9	22.3	23.3
0555	22.0	20.5	21.4	0630	22.4	21.3	22.1	0705	23.0	22.3	23.3
0556	22.1	20.4	21.4	0631	22.4	21.3	22.2	0706	23.0	22.4	23.4
0557	No reading		21.6	0632	22.4	21.2	22.2	0707	23.1	22.4	23.4
0558	No reading		21.6	0633	22.4	21.2	22.2	0708	23.1	22.5	23.4
0559	22.3	20.5	21.7	0634	22.4	21.2	22.2	0709	23.0	22.4	23.4
0600	22.5	20.7	21.7	0635	22.4	21.2	22.1	0710	23.0	22.4	23.4
0601	22.5	20.8	21.7	0636	22.4	21.2	22.2	0711	23.0	22.5	23.4
0602	22.5	20.9	21.7	0637	22.4	21.2	22.2	0712	22.9	22.5	23.4
0603	22.6	20.9	21.7	0638	22.4	21.2	22.2	0713	22.9	22.4	23.4
0604	22.6	20.8	21.7	0639	22.4	21.2	22.2	0714	22.9	22.4	23.4

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
0715	23.0	22.4	23.4	0750	23.4	22.7	23.5	0825	23.5	23.5	23.7
0716	23.1	22.4	23.4	0751	23.4	22.7	23.5	0826	23.5	23.5	23.7
0717	23.1	22.4	23.4	0752	23.4	22.7	23.5	0827	23.5	23.5	23.7
0718	23.1	22.4	23.4	0753	23.4	22.7	23.5	0828	23.5	23.5	23.7
0719	23.1	22.4	23.4	0754	23.4	22.7	23.5	0829	23.5	23.5	23.6
0720	23.1	22.4	23.4	0755	23.4	22.7	23.5	0830	23.6	23.6	23.6
0721	23.2	22.5	23.4	0756	23.4	22.7	23.5	0831	23.6	23.6	23.6
0722	23.1	22.4	23.5	0757	23.4	22.7	23.5	0832	23.6	23.6	23.6
0723	23.2	22.4	23.5	0758	23.4	22.7	23.5	0833	23.6	23.6	23.6
0724	23.2	22.4	23.5	0759	23.3	22.7	23.5	0834	23.6	23.6	23.6
0725	23.2	22.4	23.5	0800	23.3	22.7	23.5	0835	23.6	23.6	23.6
0726	23.1	22.4	23.5	0801	23.3	22.7	23.5	0836	23.6	23.6	23.6
0727	23.1	22.4	23.5	0802	23.3	22.7	23.5	0837	23.5	23.6	23.6
0728	23.2	22.4	23.5	0803	23.3	22.7	23.5	0838	23.6	23.6	23.6
0729	23.2	22.4	23.5	0804	23.4	22.7	23.5	0839	23.6	23.6	23.6
0730	23.3	22.4	23.5	0805	23.4	22.7	23.5	0840	23.6	23.6	23.6
0731	23.4	22.5	23.5	0806	23.4	22.8	23.5	0841	23.6	23.6	23.6
0732	23.4	22.6	23.5	0807	23.5	22.9	23.6	0842	23.6	23.6	23.6
0733	23.4	22.6	23.5	0808	23.5	23.0	23.6	0843	23.6	23.6	23.7
0734	23.4	22.7	23.5	0809	23.5	23.1	23.6	0844	23.6	23.6	23.7
0735	23.4	22.8	23.5	0810	23.5	23.2	23.6	0845	23.6	23.6	23.6
0736	23.4	22.9	23.6	0811	23.5	23.3	23.6	0846	23.6	23.6	23.6
0737	23.4	22.9	23.6	0812	23.5	23.3	23.6	0847	23.6	23.6	23.6
0738	23.4	23.0	23.6	0813	23.5	23.3	23.6	0848	23.6	23.6	23.6
0739	23.4	23.0	23.6	0814	23.5	23.3	23.6	0849	23.6	23.6	23.6
0740	23.4	23.0	23.6	0815	23.5	23.3	23.6	0850	23.6	23.6	23.6
0741	23.4	23.0	23.6	0816	23.5	23.4	23.7	0851	23.5	23.6	23.6
0742	23.4	23.0	23.6	0817	23.5	23.4	23.7	0852	23.5	23.6	23.6
0743	23.4	23.0	23.6	0818	23.5	23.5	23.7	0853	23.5	23.6	23.6
0744	23.4	22.9	23.5	0819	23.5	23.5	23.7	0854	23.5	23.6	23.6
0745	23.4	22.9	23.5	0820	23.5	23.5	23.7	0855	23.5	23.6	23.6
0746	23.4	22.8	23.5	0821	23.5	23.5	23.7	0856	23.5	23.6	23.6
0747	23.4	22.7	23.5	0822	23.5	23.5	23.7	0857	23.6	23.6	23.6
0748	23.4	22.7	23.6	0823	23.5	23.5	23.7	0858	23.6	23.6	23.6
0749	23.4	22.7	23.5	0824	23.5	23.5	23.7	0859	23.6	23.6	23.6

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
0900	23.6	23.6	23.6	0935	23.5	23.7	23.6	1010	23.5	23.6	23.6
0901	23.6	23.6	23.6	0936	23.5	23.7	23.6	1011	23.5	23.6	23.6
0902	23.6	23.6	23.6	0937	23.5	23.6	23.6	1012	23.5	23.6	23.6
0903	23.6	23.6	23.6	0938	23.5	23.6	23.6	1013	23.5	23.6	23.6
0904	23.6	23.6	23.6	0939	23.5	23.6	23.6	1014	23.5	23.6	23.6
0905	23.6	23.6	23.6	0940	23.5	23.6	23.6	1015	23.5	23.6	23.6
0906	23.6	23.6	23.6	0941	23.5	23.6	23.6	1016	23.5	23.6	23.6
0907	23.6	23.6	23.6	0942	23.5	23.6	23.6	1017	23.5	23.6	23.6
0908	23.6	23.6	23.6	0943	23.5	23.6	23.6	1018	23.5	23.6	23.6
0909	23.5	23.6	23.6	0944	23.5	23.6	23.6	1019	23.5	23.6	23.6
0910	23.5	23.6	23.6	0945	23.5	23.7	23.6	1020	23.5	23.6	23.6
0911	23.5	23.6	23.6	0946	23.5	23.7	23.6	1021	23.5	23.6	23.6
0912	23.6	23.6	23.6	0947	23.5	23.7	23.6	1022	23.5	23.6	23.6
0913	23.6	23.6	23.6	0948	23.5	23.7	23.6	1023	23.5	23.6	23.6
0914	23.6	23.6	23.6	0949	23.5	23.7	23.6	1024	23.5	23.6	23.6
0915	23.6	23.6	23.6	0950	23.5	23.7	23.6	1025	23.5	23.6	23.6
0916	23.6	23.6	23.6	0951	23.5	23.7	23.6	1026	23.5	23.6	23.6
0917	23.6	23.6	23.6	0952	23.6	23.7	23.6	1027	23.5	23.6	23.6
0918	23.6	23.7	23.6	0953	23.6	23.7	23.6	1028	23.5	23.6	23.6
0919	23.6	23.7	23.6	0954	23.6	23.7	23.6	1029	23.5	23.6	23.6
0920	23.6	23.7	23.6	0955	23.6	23.7	23.6	1030	23.5	23.6	23.6
0921	23.6	23.7	23.6	0956	23.6	23.7	23.6	1031	23.5	23.6	23.6
0922	23.6	23.7	23.6	0957	23.6	23.7	23.6	1032	23.5	23.6	23.6
0923	23.6	23.7	23.6	0958	23.6	23.7	23.6	1033	23.5	23.6	23.6
0924	23.6	23.7	23.6	0959	23.5	23.7	23.6	1034	23.5	23.6	23.6
0925	23.6	23.7	23.6	1000	23.5	23.7	23.6	1035	23.5	23.6	23.6
0926	23.6	23.7	23.6	1001	23.5	23.7	23.6	1036	23.5	23.6	23.6
0927	23.6	23.7	23.6	1002	23.5	23.6	23.6	1037	23.5	23.6	23.6
0928	23.6	23.7	23.6	1003	23.5	23.6	23.6	1038	23.5	23.6	23.6
0929	23.6	23.7	23.6	1004	23.5	23.6	23.6	1039	23.5	23.6	23.6
0930	23.6	23.7	23.6	1005	23.5	23.6	23.6	1040	23.5	23.6	23.6
0931	23.6	23.7	23.6	1006	23.5	23.6	23.6	1041	23.5	23.6	23.6
0932	23.6	23.7	23.6	1007	23.5	23.6	23.6	1042	23.5	23.6	23.6
0933	23.6	23.7	23.6	1008	23.5	23.6	23.6	1043	23.5	23.6	23.6
0934	23.5	23.7	23.6	1009	23.5	23.6	23.6	1044	23.5	23.6	23.6

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
1045	23.5	23.6	23.6	1120	23.5	23.6	23.6	1155	23.5	23.6	23.6
1046	23.5	23.6	23.6	1121	23.5	23.6	23.6	1156	23.5	23.6	23.6
1047	23.5	23.6	23.6	1122	23.5	23.6	23.6	1157	23.5	23.6	23.6
1048	23.5	23.6	23.6	1123	23.5	23.6	23.6	1158	23.5	23.6	23.6
1049	23.5	23.6	23.6	1124	23.5	23.6	23.6	1159	23.5	23.6	23.6
1050	23.5	23.6	23.6	1125	23.5	23.6	23.6	1200	23.5	23.6	23.6
1051	23.5	23.6	23.6	1126	23.5	23.6	23.6	1201	23.5	23.6	23.6
1052	23.5	23.6	23.6	1127	23.5	23.6	23.6	1202	23.5	23.6	23.6
1053	23.5	23.6	23.6	1128	23.5	23.6	23.6	1203	23.5	23.6	23.6
1054	23.5	23.6	23.6	1129	23.5	23.6	23.6	1204	23.5	23.6	23.6
1055	23.5	23.6	23.6	1130	23.5	23.6	23.6	1205	23.5	23.6	23.6
1056	23.5	23.6	23.6	1131	23.5	23.6	23.6	1206	23.5	23.6	23.6
1057	23.5	23.6	23.6	1132	23.5	23.6	23.6	1207	23.5	23.6	23.6
1058	23.5	23.6	23.6	1133	23.5	23.6	23.6	1208	23.5	23.6	23.6
1059	23.5	23.6	23.6	1134	23.5	23.6	23.6	1209	23.5	23.6	23.6
1100	23.5	23.6	23.6	1135	23.5	23.6	23.6	1210	23.5	23.6	23.6
1101	23.5	23.6	23.6	1136	23.5	23.6	23.6	1211	23.5	23.6	23.6
1102	23.5	23.6	23.6	1137	23.5	23.7	23.6	1212	23.5	23.6	23.6
1103	23.5	23.6	23.6	1138	23.5	23.7	23.6	1213	23.5	23.6	23.6
1104	23.5	23.6	23.6	1139	23.5	23.6	23.6	1214	23.5	23.6	23.6
1105	23.5	23.6	23.6	1140	23.5	23.6	23.6	1215	23.5	23.6	23.6
1106	23.5	23.6	23.6	1141	23.5	23.6	23.6	1216	23.5	23.6	23.6
1107	23.5	23.6	23.6	1142	23.5	23.6	23.6	1217	23.5	23.6	23.6
1108	23.5	23.6	23.6	1143	23.5	23.6	23.6	1218	23.5	23.6	23.6
1109	23.5	23.6	23.6	1144	23.5	23.6	23.6	1219	23.5	23.6	23.6
1110	23.5	23.6	23.6	1145	23.5	23.6	23.6	1220	23.5	23.6	23.6
1111	23.5	23.6	23.6	1146	23.5	23.6	23.6	1221	23.5	23.6	23.6
1112	23.5	23.6	23.6	1147	23.5	23.6	23.6	1222	23.5	23.6	23.6
1113	23.5	23.6	23.6	1148	23.5	23.6	23.6	1223	23.5	23.6	23.6
1114	23.5	23.6	23.6	1149	23.5	23.6	23.6	1224	23.5	23.6	23.6
1115	23.5	23.6	23.6	1150	23.5	23.6	23.6	1225	23.5	23.6	23.6
1116	23.5	23.6	23.6	1151	23.5	23.6	23.6	1226	23.5	23.6	23.6
1117	23.5	23.6	23.6	1152	23.5	23.6	23.6	1227	23.5	23.6	23.6
1118	23.5	23.6	23.6	1153	23.5	23.6	23.6	1228	23.5	23.6	23.6
1119	23.5	23.6	23.6	1154	23.5	23.6	23.6	1229	23.5	23.6	23.6

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
1230	23.5	23.6	23.6	1305	23.5	23.6	23.6	1340	23.5	23.5	23.6
1231	23.5	23.6	23.6	1306	23.5	23.6	23.6	1341	23.5	23.5	23.6
1232	23.5	23.6	23.6	1307	23.5	23.6	23.6	1342	23.6	23.5	23.6
1233	23.5	23.6	23.6	1308	23.5	23.6	23.6	1343	23.6	23.5	23.6
1234	23.5	23.6	23.6	1309	23.5	23.6	23.6	1344	23.6	23.5	23.6
1235	23.5	23.6	23.6	1310	23.5	23.6	23.6	1345	23.6	23.5	23.6
1236	23.5	23.6	23.6	1311	23.5	23.6	23.6	1346	23.6	23.5	23.6
1237	23.5	23.6	23.6	1312	23.5	23.6	23.6	1347	23.6	23.5	23.6
1238	23.5	23.6	23.6	1313	23.5	23.6	23.6	1348	23.6	23.5	23.6
1239	23.5	23.6	23.6	1314	23.5	23.6	23.6	1349	23.6	23.5	23.6
1240	23.5	23.6	23.6	1315	23.5	23.6	23.6	1350	23.6	23.5	23.6
1241	23.5	23.6	23.6	1316	23.5	23.6	23.6	1351	23.6	23.5	23.6
1242	23.5	23.6	23.6	1317	23.5	23.6	23.6	1352	23.6	23.5	23.6
1243	23.5	23.6	23.6	1318	23.5	23.6	23.6	1353	23.6	23.5	23.6
1244	23.5	23.6	23.6	1319	23.5	23.6	23.6	1354	23.6	23.5	23.6
1245	23.5	23.6	23.6	1320	23.5	23.6	23.6	1355	23.6	23.5	23.6
1246	23.5	23.6	23.6	1321	23.6	23.6	23.6	1356	23.6	23.5	23.6
1247	23.5	23.6	23.6	1322	23.6	23.6	23.6	1357	23.6	23.5	23.6
1248	23.5	23.6	23.6	1323	23.6	23.6	23.6	1358	23.6	23.5	23.6
1249	23.5	23.6	23.6	1324	23.5	23.6	23.6	1359	23.6	23.5	23.6
1250	23.5	23.6	23.6	1325	23.5	23.6	23.6	1400	23.6	23.5	23.6
1251	23.5	23.6	23.6	1326	23.5	23.6	23.6	1401	23.6	23.5	23.6
1252	23.5	23.6	23.6	1327	23.5	23.6	23.6	1402	23.6	23.5	23.6
1253	23.5	23.6	23.6	1328	23.5	23.6	23.6	1403	23.6	23.5	23.6
1254	23.5	23.6	23.6	1329	23.6	23.6	23.6	1404	23.6	23.5	23.6
1255	23.5	23.6	23.6	1330	23.6	23.6	23.6	1405	23.6	23.5	23.6
1256	23.5	23.6	23.6	1331	23.6	23.6	23.6	1406	23.6	23.5	23.6
1257	23.5	23.6	23.6	1332	23.6	23.6	23.6	1407	23.6	23.5	23.6
1258	23.5	23.6	23.6	1333	23.6	23.6	23.6	1408	23.6	23.5	23.6
1259	23.5	23.6	23.6	1334	23.6	23.6	23.6	1409	23.6	23.6	23.6
1300	23.5	23.6	23.6	1335	23.6	23.6	23.6	1410	23.6	23.6	23.6
1301	23.5	23.6	23.6	1336	23.6	23.6	23.6	1411	23.6	23.6	23.6
1302	23.5	23.6	23.6	1337	23.6	23.6	23.6	1412	23.6	23.6	23.6
1303	23.5	23.6	23.6	1338	23.6	23.6	23.6	1413	23.6	23.6	23.6
1304	23.5	23.6	23.6	1339	23.5	23.5	23.6	1414	23.6	23.6	23.6

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
1415	23.6	23.6	23.6	1450	23.5	23.5	23.7	1525	23.6	23.5	23.7
1416	23.6	23.6	23.6	1451	23.5	23.4	23.7	1526	23.6	23.5	23.7
1417	23.5	23.6	23.6	1452	23.5	23.4	23.7	1527	23.6	23.5	23.7
1418	23.5	23.6	23.6	1453	23.5	23.5	23.7	1528	23.6	23.5	23.7
1419	23.5	23.5	23.6	1454	23.5	23.5	23.7	1529	23.6	23.5	23.7
1420	23.5	23.5	23.6	1455	23.5	23.5	23.7	1530	23.6	23.6	23.7
1421	23.5	23.5	23.6	1456	23.5	23.5	23.7	1531	23.6	23.6	23.7
1422	23.5	23.5	23.6	1457	23.6	23.5	23.7	1532	23.6	23.6	23.7
1423	23.5	23.6	23.6	1458	23.6	23.5	23.7	1533	23.6	23.5	23.7
1424	23.6	23.6	23.6	1459	23.6	23.5	23.7	1534	23.6	23.5	23.7
1425	23.6	23.6	23.6	1500	23.6	23.5	23.7	1535	23.6	23.5	23.7
1426	23.6	23.6	23.6	1501	23.5	23.5	23.7	1536	23.6	23.5	23.7
1427	23.6	23.6	23.6	1502	23.5	23.5	23.7	1537	23.6	23.5	23.7
1428	23.5	23.6	23.6	1503	23.5	23.5	23.7	1538	23.6	23.5	23.7
1429	23.5	23.6	23.6	1504	23.5	23.5	23.7	1539	23.6	23.5	23.7
1430	23.5	23.6	23.6	1505	23.5	23.4	23.7	1540	23.6	23.5	23.7
1431	23.5	23.5	23.7	1506	23.5	23.4	23.7	1541	23.6	23.5	23.7
1432	23.5	23.5	23.7	1507	23.5	23.4	23.7	1542	23.6	23.5	23.7
1433	23.5	23.5	23.7	1508	23.5	23.4	23.7	1543	23.6	23.5	23.7
1434	23.5	23.5	23.7	1509	23.5	23.5	23.7	1544	23.5	23.6	23.7
1435	23.5	23.5	23.7	1510	23.5	23.5	23.7	1545	23.5	23.6	23.7
1436	23.5	23.5	23.7	1511	23.5	23.5	23.7	1546	23.5	23.6	23.7
1437	23.5	23.5	23.7	1512	23.5	23.5	23.7	1547	23.6	23.6	23.7
1438	23.5	23.5	23.7	1513	23.5	23.5	23.7	1548	23.6	23.6	23.7
1439	23.5	23.5	23.7	1514	23.5	23.4	23.6	1549	23.6	23.6	23.7
1440	23.5	23.5	23.7	1515	23.5	23.4	23.6	1550	23.6	23.6	23.7
1441	23.5	23.5	23.7	1516	23.5	23.4	23.6	1551	23.6	23.6	23.7
1442	23.6	23.5	23.7	1517	23.5	23.4	23.6	1552	23.5	23.5	23.7
1443	23.6	23.5	23.7	1518	23.5	23.4	23.6	1553	23.5	23.5	23.7
1444	23.6	23.5	23.7	1519	23.5	23.4	23.7	1554	23.5	23.5	23.7
1445	23.6	23.5	23.7	1520	23.5	23.5	23.7	1555	23.5	23.5	23.7
1446	23.6	23.5	23.7	1521	23.5	23.5	23.7	1556	23.5	23.4	23.7
1447	23.6	23.5	23.7	1522	23.5	23.5	23.7	1557	23.5	23.4	23.7
1448	23.5	23.5	23.7	1523	23.5	23.5	23.7	1558	23.5	23.4	23.7
1449	23.5	23.5	23.7	1524	23.6	23.5	23.7	1559	23.5	23.4	23.7

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E	GMT	A	D	E	GMT	A	D	E
1600	23.5	23.4	23.7	1635	23.6	23.3	23.6	1710	23.6	22.9	23.6
1601	23.5	23.5	23.7	1636	23.6	23.3	23.6	1711	23.6	22.9	23.6
1602	23.5	23.5	23.7	1637	23.6	23.2	23.6	1712	23.6	22.9	23.6
1603	23.5	23.5	23.7	1638	23.6	23.3	23.6	1713	23.6	22.9	23.6
1604	23.5	23.5	23.7	1639	23.6	23.2	23.6	1714	23.6	22.9	23.6
1605	23.6	23.4	23.7	1640	23.6	23.1	23.6	1715	23.5	22.9	23.6
1606	23.6	23.4	23.6	1641	23.6	23.0	23.6	1716	23.5	22.9	23.6
1607	23.6	23.4	23.6	1642	23.6	23.1	23.6	1717	23.5	22.9	23.6
1608	23.5	23.4	23.6	1643	23.6	23.2	23.6	1718	23.5	22.9	23.6
1609	23.5	23.3	23.6	1644	23.6	23.1	23.6	1719	23.5	22.9	23.6
1610	23.5	23.3	23.6	1645	23.6	23.1	23.7	1720	23.5	22.9	23.6
1611	23.5	23.3	23.6	1646	23.6	23.2	23.7	1721	23.5	22.9	23.6
1612	23.5	23.3	23.6	1647	23.6	23.3	23.7	1722	23.5	22.9	23.6
1613	23.5	23.3	23.6	1648	23.6	23.3	23.7	1723	23.6	22.9	23.5
1614	23.6	23.2	23.6	1649	23.6	23.3	23.7	1724	23.6	22.9	23.5
1615	23.6	23.2	23.6	1650	23.6	23.3	23.7	1725	23.6	22.8	23.5
1616	23.6	23.3	23.6	1651	23.6	23.3	23.7	1726	23.6	22.8	23.5
1617	23.6	23.4	23.7	1652	23.6	23.2	23.7	1727	23.6	22.8	23.5
1618	23.6	23.4	23.7	1653	23.6	23.2	23.7	1728	23.6	22.8	23.5
1619	23.6	23.4	23.7	1654	23.6	23.1	23.7	1729	23.6	22.9	23.5
1620	23.6	23.5	23.7	1655	23.6	23.2	23.7	1730	23.5	22.9	23.5
1621	23.6	23.5	23.7	1656	23.6	23.3	23.7	1731	23.5	22.8	23.5
1622	23.6	23.5	23.7	1657	23.6	23.2	23.7	1732	23.5	22.8	23.5
1623	23.6	23.5	23.7	1658	23.6	22.9	23.7	1733	23.5	22.7	23.5
1624	23.6	23.5	23.7	1659	23.6	22.9	23.7	1734	23.5	22.7	23.5
1625	23.6	23.5	23.7	1700	23.6	22.9	23.7	1735	23.5	22.8	23.5
1626	23.6	23.5	23.7	1701	23.6	22.9	23.7	1736	23.5	22.8	23.5
1627	23.5	23.5	23.7	1702	23.6	22.9	23.7	1737	23.6	22.8	23.5
1628	23.5	23.5	23.7	1703	23.6	22.9	23.6	1738	23.6	22.8	23.5
1629	23.5	23.5	23.7	1704	23.6	22.9	23.6	1739	23.6	22.7	23.5
1630	23.5	23.5	23.7	1705	23.6	22.9	23.6	1740	23.6	22.7	23.4
1631	23.6	23.5	23.7	1706	23.6	22.9	23.6	1741	23.6	22.7	23.3
1632	23.6	23.4	23.6	1707	23.6	22.9	23.6	1742	23.6	22.7	23.3
1633	23.6	23.4	23.6	1708	23.6	22.9	23.6	1743	23.6	22.7	23.3
1634	23.6	23.3	23.6	1709	23.6	22.9	23.6	1744	23.6	22.7	23.3

THERMAL ARRAY DATA

TONGUE OF THE OCEAN 12 MARCH 1960
24°35'N 77°34'W

GMT	A	D	E
1745	23.6	22.7	23.4
1746	23.6	22.7	23.5
1747	23.6	22.7	23.5
1748	23.6	22.7	23.5
1749	23.6	22.7	23.6

APPENDIX V

CURRENT OBSERVATIONS

CURRENT OBSERVATIONS

TONGUE OF THE OCEAN
24°35'N 77°34'W

TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)	TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)
090940	10	033	.7	091545	10	059	.6
090945	25	303	.6	091600	25	337	.5
090948	50	287	.4	091605	50	319	.3
090952	75	306	.3	091610	75	306	.4
090959	100	257	.1	091615	100	296	.2
091002	150	290	.2	091625	150	299	.3
091007	200	288	.35	091635	200	289	.4
091029	10	058	.6	091702	10	360	.6
091033	25	315	.6	091706	25	295	.4
091040	50	284	.4	091710	50	291	.3
091055	75	295	.3	091717	75	291	.3
091100	100	287	.3	091723	100	285	.2
091108	150	289	.3	091734	150	286	.3
091115	200		<.2	091739	200	289	.3
091143	10	066	.6	091802	10	015	.6
091147	25	311	.5	091808	25	301	.4
091151	50	288	.4	091815	50	289	.3
091158	75	293	.3	091821	75	291	.2
091203	100	288	.3	091826	100		<.2
091208	150	291	.2	091832	150	288	.3
091215	200	294	.3	091840	200	285	.3
091237	10	058	.6	091900	10	360	.6
091243	25	301	.5	091907	25	297	.4
091248	50	288	.45	091914	50	295	.2
091253	75	289	.35	091924	75		<.2
091258	100	290	.3	091930	100	290	.2
091305	150	286	.3	091940	150	287	.3
091310	200	294	.3	091948	200	289	.3
091337	10	053	.6	092015	10	029	.4
091345	25	325	.4	092025	25	010	.35
091350	50	286	.4	092030	50	354	.3
091357	75	294	.3	092042	75	359	.3
091402	100	291	.3	092050	100	360	.3
091410	150	294	.3	092055	150		<.2
091417	200	290	.4	092102	200		<.2
091447	10	056	.6	092125	10	026	.2
091457	25	327	.6	092145	25	335	.2
091501	50	337	.4	092155	50	327	.2
091506	75	338	.5	092200	75	319	.2
091510	100	343	.2	092220	100	308	.2
091520	150	350	.4	092237	150		<.2
091526	200	359	.4	092255	200		<.2

CURRENT OBSERVATIONS

TONGUE OF THE OCEAN
24°35'N 77°34'W

TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)	TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)
092310	10		<.2	100645	10	055	.2
092345	25	319	.3	100652	25	061	.2
100005	50	328	.2	100701	50	032	.3
100012	75	308	.3	100707	75	029	.3
100020	100		<.2	100712	100	052	.5
100027	150		<.2	100730	150		<.2
100031	200		<.2	100735	200		<.2
100115	10	022	.3	100800	10	360	.2
100120	25	359	.4	100820	25	353	<.2
100125	50	360	.3	100830	50	360	<.2
100130	75	359	.3	100836	75		<.2
100136	100	360	.3	100840	100	354	.4
100142	150		<.2	100845	150		<.2
100146	200		<.2	100850	200		<.2
100218	10	022	.3	100930	10	360	.4
100233	25	360	.4	100940	25	360	.3
100236	50	070	.3	100945	50		<.2
100240	75	068	.4	100950	75		<.2
100244	100	086	.3	100955	100		<.2
100249	150		<.2	101000	150		<.2
100253	200		<.2	101005	200	088	.3
100320	10	035	.5	101030	10	306	.3
100331	25	036	.4	101036	25	328	.3
100337	50	033	.4	101042	50		<.2
100342	75	044	.5	101045	75		<.2
100347	100	067	.5	101057	100	327	<.2
100352	150		<.2	101100	150	360	<.2
100358	200		<.2	101110	200	360	.3
100427	10	044	.4	101138	10	313	.3
100434	25	036	.4	101143	25	343	.4
100439	50	034	.4	101150	50	360	.2
100445	75	061	.4	101200	75	332	<.2
100449	100	068	.5	101215	100	353	.2
100453	150		<.2	101225	150	049	.2
100500	200		<.2	101232	200	057	.35
100537	10	046	.2	101300	10	025	.4
100548	25	020	.25	101307	25	360	.4
100556	50	351	.2	101310	50	337	<.2
100559	75	007	.3	101328	75	345	.25
100612	100	021	.4	101332	100		<.2
100619	150		<.2	101337	150	032	.3
100624	200		<.2	101345	200	051	.35

CURRENT OBSERVATIONS

TONGUE OF THE OCEAN
24°35'N 77°34'W

TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)	TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)
101405	10	022	.5	102035	10	021	.5
101420	25	347	.4	102039	25	356	.3
101425	50		<.2	102044	50	319	.2
101427	75	346	.25	102050	75	354	.3
101440	100	360	.3	102055	100	359	.3
101445	150	041	.4	102100	150	049	.4
101450	200	062	.5	102105	200	066	.2
101515	10	360	.5	102140	10	360	.5
101525	25	353	.4	102144	25		<.2
101530	50	345	.3	102147	50	316	.25
101535	75	350	.2	102152	75	339	.3
101543	100	044	.4	102158	100	353	.25
101547	150	061	.45	102204	150	036	.3
101558	200	071	.5	102210	200		<.2
101645	10	020	.5	102245	10	022	.45
101655	25	358	.3	102249	25		<.2
101705	50	344	.2	102251	50	328	.2
101712	75		<.2	102257	75		<.2
101718	100	033	.3	102300	100	349	.2
101724	150	052	.3	102307	150	035	.3
101729	200	069	.3	102312	200		<.2
101746	10	026	.5	102350	10	028	.5
101750	25		<.2	102355	25	352	.3
101759	50		<.2	110002	50		<.2
101802	75		<.2	110005	75	340	.2
101805	100	359	.3	110015	100	347	.3
101810	150	050	.4	110025	150	046	.4
101817	200	061	.2	110035	200	027	.2
101840	10	025	.5	110100	10	032	.4
101843	25	357	.3	110105	25	357	.3
101850	50	345	.3	110110	50	360	.3
101856	75		<.2	110117	75	022	.3
101902	100	045	.3	110125	100	020	.3
101907	150	054	.3	110128	150	047	.4
101914	200	051	.3	110134	200	024	.3
101937	10	023	.5	110204	10	338	.4
101940	25		<.2	110208	25	353	.3
101944	50		<.2	110215	50	018	.35
101950	75		<.2	110218	75	026	.4
101955	100	359	.3	110223	100	033	.45
102000	150	044	.3	110228	150	026	.5
102005	200		<.2	110234	200	027	.5

CURRENT OBSERVATIONS

TONGUE OF THE OCEAN
24°35'N 77°34'W

TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)	TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)
110305	10	054	.5	110940	10	035	.5
110308	25	031	.6	110943	25	027	.5
110314	50	046	.6	110945	50	048	.3
110318	75	052	.5	110952	75	043	.4
110323	100	041	.5	110958	100	028	.3
110328	150	051	.5	111004	150	026	.4
110345	200	033	.5	111010	200	050	.6
110410	10	027	.6	111040	10	035	.5
110417	25	023	.5	111046	25	360	.4
110423	50	019	.5	111050	50	360	.3
110428	75	046	.6	111055	75	360	.3
110432	100	039	.5	111100	100	357	.3
110435	150	051	.5	111106	150	019	.4
110442	200	036	.5	111112	200	044	.5
110512	10	040	.4	111133	10	038	.5
110515	25	360	.4	111137	25	355	.4
110520	50	019	.6	111142	50	360	.4
110530	75	033	.4	111146	75	354	.3
110535	100	038	.5	111152	100	335	.3
110540	150	046	.5	111158	150	021	.4
110550	200	031	.5	111204	200	053	.5
110620	10	035	.5	111224	10	045	.5
110623	25	023	.5	111228	25	360	.4
110630	50	020	.3	111233	50	042	.4
110638	75	011	.3	111237	75	360	.3
110650	100	020	.3	111242	100	360	.3
110655	150	042	.4	111251	150	028	.5
110700	200	025	.5	111256	200	054	.5
110745	10	047	.6	111317	10	079	.5
110749	25	031	.5	111321	25	038	.5
110752	50	022	.4	111325	50	038	.5
110756	75	039	.4	111330	75	040	.4
110802	100	036	.4	111335	100	359	.3
110805	150	036	.4	111339	150	026	.5
110811	200	041	.5	111344	200	056	.45
110839	10	051	.6	111404	10	065	.6
110843	25	045	.5	111408	25	030	.5
110846	50	051	.4	111412	50	035	.5
110851	75	042	.5	111416	75	051	.5
110901	100	039	.5	111420	100	035	.5
110906	150	034	.4	111424	150	036	.6
110910	200	060	.5	111428	200	064	.3

CURRENT OBSERVATIONS

TONGUE OF THE OCEAN
24°35'N 77°34'W

TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)	TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)
111448	10	048	.6	112049	10	015	.4
111454	25	022	.5	112058	25		<.2
111459	50	028	.5	112100	50	045	.5
111502	75	028	.4	112105	75	059	.6
111506	100	036	.5	112110	100	063	.6
111510	150	060	.6	112115	150	063	.5
111514	200	084	.4	112120	200		<.2
111536	10	061	.8	112145	10	340	.2
111539	25	029	.5	112200	25		<.2
111542	50	064	.3	112205	50	035	.4
111550	75	054	.6	112212	75	360	.5
111553	100	059	.6	112218	100	030	.5
111557	150	068	.6	112223	150	063	.5
111600	200	087	.6	112232	200	059	.3
111708	10	062	.8	112300	10	250	.3
111720	25	057	.5	112313	25		<.2
111722	50	052	.4	112315	50	097	.3
111727	75	038	.6	112322	75	086	.4
111734	100	043	.6	112328	100	090	.4
111737	150	048	.7	112333	150	078	.4
111740	200	058	.6	112345	200		<.2
111802	10	070	.8	120014	10	170	.4
111815	25	032	.5	120020	25		<.2
111819	50	028	.6	120023	50	101	.4
111823	75	047	.6	120030	75	081	.5
111826	100	049	.6	120036	100	077	.5
111830	150	067	.6	120040	150	072	.5
111835	200	079	.6	120045	200	126	.2
111900	10	040	.3	120110	10	158	.4
111909	25		<.2	120115	25		<.2
111912	50	042	.5	120119	50	102	.4
111915	75	045	.6	120124	75	078	.5
111918	100	053	.5	120127	100	075	.5
111923	150	057	.5	120130	150	068	.5
111927	200	075	.5	120138	200		<.2
111950	10		<.2	120210	10	132	.3
111955	25		<.2	120216	25		<.2
112000	50	360	.4	120220	50	081	.3
112003	75	360	.5	120227	75	074	.6
112008	100	360	.5	120234	100	078	.6
112020	150	017	.5	120240	150	071	.6
112023	200		<.2	120245	200		<.2

CURRENT OBSERVATIONS

TONGUE OF THE OCEAN
24°35'N 77°34'W

TIME (LOCAL)	DEPTH (METERS)	DIRECTION (°TRUE)	VELOCITY (KNOTS)	TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)
120314	10	118	.35	120903	10	127	.6
120321	25		<.2	120907	25	128	.4
120323	50		<.2	120911	50	112	.4
120330	75	057	.6	120918	75	112	.4
120334	100	060	.65	120924	100	071	.6
120340	150	061	.6	120930	150	064	.7
120355	200	031	.3	120935	200	042	.5
120424	10	094	.3	120957	10	129	.7
120428	25	106	.3	121000	25	151	.5
120434	50	086	.4	121005	50	120	.2
120439	75	064	.6	121013	75	106	.4
120442	100	067	.8	121020	100	073	.5
120449	150	082	.6	121025	150	073	.7
120456	200	090	.3	121028	200	043	.5
120520	10	083	.3	121050	10	123	.8
120524	25	086	.3	121055	25	145	.4
120530	50	106	.4	121100	50	109	.2
120535	75	055	.6	121113	75	107	.3
120538	100	060	.7	121117	100	075	.5
120544	150	062	.7	121122	150	061	.7
120552	200	054	.4	121125	200	035	.6
120618	10	086	.3	121155	10	143	.7
120624	25	105	.35	121203	25	125	.4
120628	50	110	.4	121205	50	100	.2
120632	75	068	.4	121213	75	106	.3
120637	100	056	.7	121223	100	084	.5
120642	150	060	.7	121228	150	070	.6
120646	200	043	.3	121235	200	065	.5
120705	10	115	.6	121320	10	126	1.0
120710	25	147	.5	121325	25	122	.5
120716	50	118	.4	121330	50	119	.2
120730	75	097	.5	121337	75	113	.35
120733	100	080	.7	121345	100	095	.35
120750	150	090	.7	121353	150	093	.6
120755	200	064	.4	121355	200	100	.4
120810	10	113	.6	121410	10	122	1.0
120815	25	136	.4	121425	25	132	.5
120818	50	116	.5	121430	50	096	.3
120823	75	114	.4	121445	75	108	.4
120828	100	089	.6	121452	100	100	.5
120833	150	090	.7	121457	150	097	.7
120841	200	060	.4	121500	200	080	.35

CURRENT OBSERVATIONS

TONGUE OF THE OCEAN
24°35'N 77°34'W

TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)	TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)
131530	10	192	.5	132045	10	133	.5
131533	25	145	.6	132050	25	186	.6
131537	50	153	.5	132055	50	147	.5
131542	75	141	.3	132100	75	145	.5
131547	100	126	.5	132104	100	136	.5
131551	150	159	.4	132108	150	126	.5
131555	200		<.2	132115	200	128	.3
131620	10	125	.4	132135	10	129	.6
131622	25	158	.6	132145	25	153	.6
131628	50	143	.5	132150	50	147	.6
131630	75	136	.5	132154	75	135	.6
131638	100	127	.6	132158	100	135	.6
131643	150	155	.6	132200	150	125	.5
131647	200	132	.3	132205	200	117	.4
131710	10	137	.5	132223	10	129	.6
131715	25	153	.6	132228	25	150	.6
131725	50	140	.6	132230	50	128	.5
131730	75	135	.5	132238	75	145	.6
131734	100	125	.6	132248	100	128	.6
131737	150	143	.6	132253	150	130	.4
131743	200	140	.4	132255	200	135	.3
131809	10	130	.4	140010	10	128	.5
131814	25	129	.6	140020	25	168	.6
131817	50	127	.6	140024	50	136	.5
131822	75	135	.4	140027	75	127	.5
131830	100	122	.7	140030	100	120	.5
131835	150	126	.5	140034	150	135	.5
131845	200	124	.5	140040	200	132	.2
131903	10	120	.6	140103	10	133	.5
131906	25	129	.6	140106	25	168	.5
131910	50	126	.6	140112	50	162	.4
131915	75	126	.6	140116	75	129	.5
131916	100	126	.65	140120	100	138	.4
131928	150	124	.6	140125	150	135	.5
131930	200	126	.4	140129	200		<.2
131955	10	155	.5	140148	10	124	.5
132004	25	150	.4	140153	25	169	.4
132008	50	146	.5	140156	50	145	.5
132014	75	145	.5	140200	75	140	.5
132018	100	132	.6	140204	100	135	.5
132022	150	156	.5	140207	150	171	.4
132026	200	145	.3	140215	200	128	.2

CURRENT OBSERVATIONS

TONGUE OF THE OCEAN
24°35'N 77°34'W

TIME (LOCAL)	DEPTH (METERS)	DIRECTION (° TRUE)	VELOCITY (KNOTS)
140235	10	120	.6
140255	25	164	.5
140300	50	126	.4
140305	75	145	.5
140310	100	146	.4
140320	150	155	.4
140324	200	120	.2
140400	10	133	.6
140405	25	146	.6
140408	50	155	.4
140414	75	128	.6
140418	100	124	.5
140422	150	146	.5
140429	200	121	.3
140458	10	145	.6
140502	25	146	.6
140505	50	136	.5
140510	75	138	.4
140515	100	130	.4
140520	150	131	.3
140527	200	128	.2
140553	10	115	.6
140558	25	149	.5

APPENDIX VI

RADIATION DATA

The following is a listing of incident and reflected radiation data. The points were picked off the Brown recorder chart paper, averaged over 1/2 hourly intervals and tabulated.

REFLECTED RADIATION DATA

$\frac{\text{GR CAL}}{\text{CM}^2}$

TONGUE OF THE OCEAN

24°35'N 77°34'W

HOUR SPAN	LOCATION: ST'B'D 9 MARCH	10 MARCH	11 MARCH	LOCATION: PORT 9 MARCH	10 MARCH	11 MARCH	LOCATION: STEM 9 MARCH	10 MARCH	11 MARCH
0500-0530	.00	.00	.00	.00	.00	.00	.00	.00	.00
0530-0600	.00	.00	.00	.00	.00	.00	.00	.00	.00
0600-0630	.17	.05	.28	.16	.06	.51	.16	.05	.27
0630-0700	.42	3.46	.76	.29	.30	1.07	.42	.35	.60
0700-0730	.74	2.04	1.84	.51	.95	1.78	.60	1.26	1.45
0730-0800	.82	2.33	2.41	.51	1.33	2.49	.38	1.43	1.45
0800-0830	.87	2.86	2.70	.41	1.46	1.91	.66	1.50	1.57
0830-0900	1.88	2.90	2.66	.60	1.18	1.35	1.08	1.05	1.13
0900-0930	3.33	2.90	2.83	.80	.83	1.07	1.06	.79	.85
0930-1000	3.28	3.03	2.73	.69	.68	.92	1.00	.47	.58
1000-1030	2.70	3.08	2.97	.69	.55	.71	.99	.54	.40
1030-1100	2.23	2.29	2.28	.68	.52	.66	1.17	1.09	.98
1100-1130	1.75	2.00	1.93	.86	.51	.64	1.04	1.14	1.26
1130-1200	1.91	1.98	1.99	.89	.56	.61	1.04	1.13	1.27
1200-1230	1.92	2.02	1.93	.94	.61	.59	1.14	1.14	1.16
1230-1300	2.15	2.03	1.98	.80	.55	.55	1.19	1.12	1.12
1300-1330	1.86	2.04	2.05	.75	.54	.56	1.19	1.09	1.10
1330-1400	1.70	2.06	2.02	.75	.45	.46	1.04	1.05	1.07
1400-1430	1.79	1.90	2.01	.43	.59	.45	.88	1.18	1.05
1430-1500	2.27	2.41	2.17	.49	.56	.60	1.03	1.04	1.00
1500-1530	2.92	3.01	2.90	.63	.58	.54	.97	1.05	1.01
1530-1600	2.60	3.08	3.74	.65	.56	.52	.86	1.01	1.01
1600-1630	2.36	2.78	3.04	.55	.62	.50	.82	1.17	1.01
1630-1700	2.57	2.79	2.82	.51	.43	.48	1.02	.93	1.17
1700-1730	1.98	2.32	2.18	.44	.55	.42	.61	.44	.89
1730-1800	.62	1.13	1.18	.36	.39	.39	.27	.26	.47
1800-1830	.32	.22	.38	.32	.19	.34	.32	.22	.34
1830-1900	.22	.31	.39	.22	.31	.38	.22	.31	.38
1900-1930	.21	.38	.23	.21	.38	.25	.21	.38	.25
1930-2000	.17	.00	.00	.17	.00	.00	.17	.00	.00
2000-2030	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTALS	45.76	57.40	54.45	15.31	16.23	20.80	21.54	23.19	24.84

INCIDENT RADIATION DATA

$\frac{\text{GR CAL}}{\text{CM}^2}$

TONGUE OF THE OCEAN

24°35'N 77°34'W

HOUR SPAN	LOCATION: TOP AERO SHACK				LOCATION: STEM			
	9 MARCH	10 MARCH	11 MARCH	12 MARCH	9 MARCH	10 MARCH	11 MARCH	12 MARCH
0500-0530	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0530-0600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0600-0630	0.0	0.3	0.4	1.8	0.1	0.0	0.0	1.4
0630-0700	1.4	2.7	2.0	3.0	1.5	1.3	1.9	1.5
0700-0730	4.9	5.9	7.1	4.0	4.2	3.3	3.6	3.2
0730-0800	7.1	11.6	13.2	10.2*	5.8	6.2	6.8	7.8*
0800-0830	6.2	18.1	17.0	16.4*	5.8	11.1	11.6	12.4*
0830-0900	18.3	22.8	23.3	22.7	15.8	16.6	17.4	17.0
0900-0930	27.4	24.1	24.4	27.9	22.1	19.8	20.4	21.9
0930-1000	28.8	29.8	27.9	30.4	24.9	25.5	24.2	31.2
1000-1030	30.6	32.3	33.6	33.3	27.8	28.5	29.2	30.5
1030-1100	35.1	36.1	36.2	33.0	32.3	32.5	32.0	30.4
1100-1130	25.1	37.9	38.9	24.1	24.0	35.0	37.4	23.8
1130-1200	30.7	38.8	36.5	26.9	26.6	36.8	36.1	27.7
1200-1230	32.7	38.0	41.4	39.0	31.7	35.2	39.5	38.1
1230-1300	36.0	38.1	39.8	38.8	33.8	38.3	37.0	39.2
1300-1330	36.1	37.8	39.4	31.9	35.7	38.4	40.1	34.9
1330-1400	26.3	36.2	36.9	28.0*	27.8	37.8	37.8	31.3*
1400-1430	22.7	33.7	34.2	24.0*	24.1	36.6	37.7	27.7*
1430-1500	29.0	30.7	31.1	20.0	33.2	33.4	32.0	24.0
1500-1530	26.9	27.2	27.2	12.6	29.3	31.4	31.5	23.1
1530-1600	20.9	22.0	22.8	20.8	21.7	27.8	27.3	13.8
1600-1630	15.4	17.5	17.7	14.6	20.0	23.8	24.0	20.2
1630-1700	11.6	11.5	12.1	12.4	17.9	18.4	17.2	14.0
1700-1730	7.8	7.0	6.6	5.0	12.3	12.1	11.8	10.0*
1730-1800	3.5	2.8	2.6	0.0*	5.9	5.5	5.4	6.0*
1800-1830	0.5	0.3	0.0	0.0	1.9	0.0	0.1	2.0*
1830-1900	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0*
TOTALS	485.0	563.2	572.3	480.8	486.2	555.3	562.0	493.1*

* ESTIMATED VALUES

U. S. Navy Hydrographic Office
TONGUE OF THE OCEAN RESEARCH EXPERIMENT, by A. Wayne Magnitzky and Howard V. French, 1960. 132 p., 23 figs., 6 app. ASWEPS Report No. 3 (H. O. TR-94)

Bibliography

Oceanographic Cruise was made aboard USS SAN PABLO from 4 to 20 March 1960. A short discussion of the data is given together with illustrations. Data are tabulated and included as Appendixes I through VI. Analysis of data has not been completed.

1. Oceanography - Tongue of the Ocean
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